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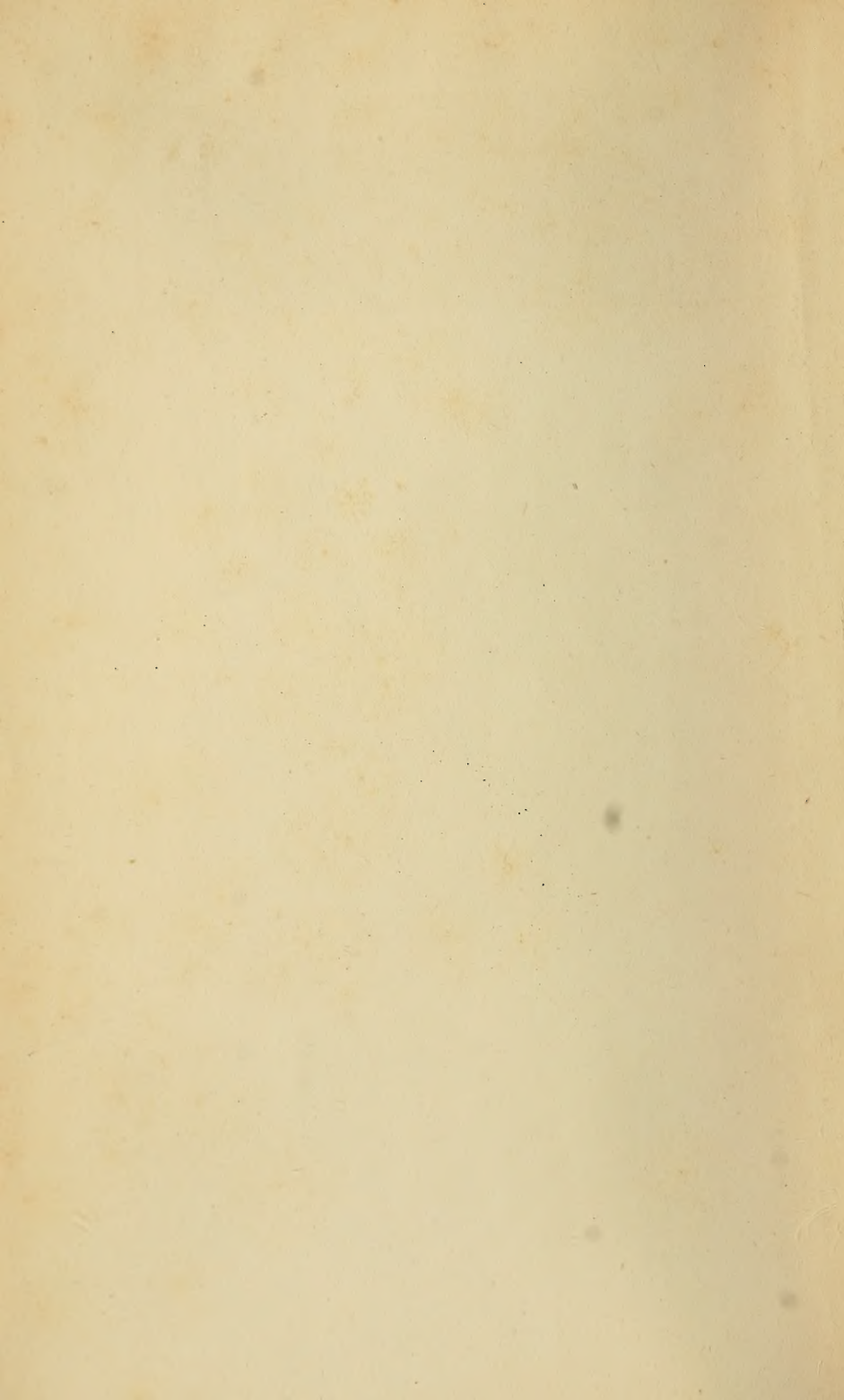


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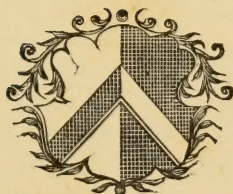
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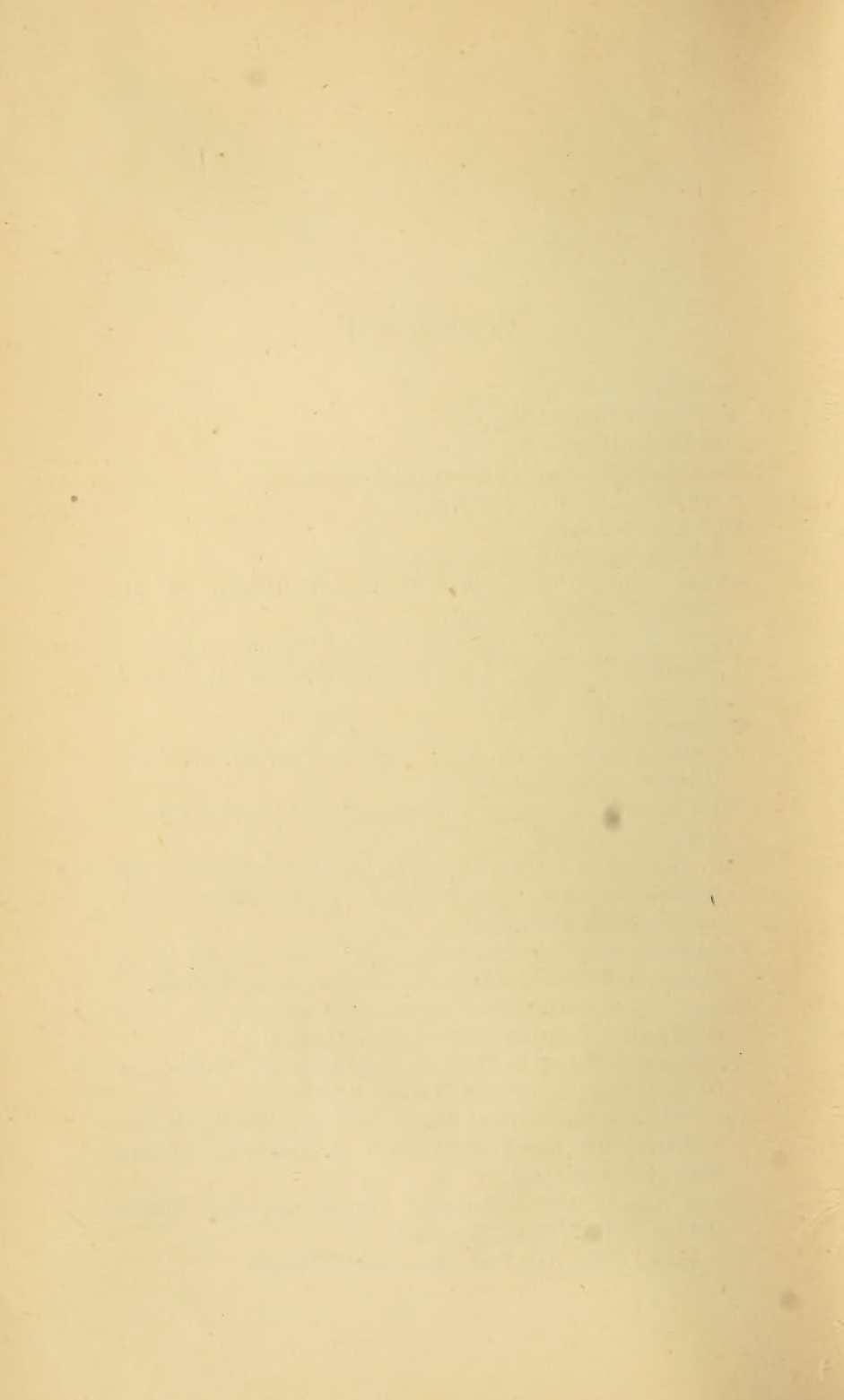


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*December 31, 1887.*

# SIR GEORGE BURROWS,

BORN NOV. 28, 1801, DIED DEC. 12, 1887.

BY

SIR JAMES PAGET.

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SIR GEORGE BURROWS was born in 1801 in Bloomsbury Square. His father, Dr. George Man Burrows, a member of a family of Kentish yeomen, who had lived for at least two centuries at Chalk, near Gravesend, was at that time a general practitioner, and one of the most energetic. He took a leading part as a member, and for some years chairman, of the "Association of Surgeon-Apothecaries of England," in the promotion of the Apothecaries' Act of 1815, and was, for the first two years after it passed, a member of the Court of Examiners. He was also for three years one of the editors of the *London Medical Repository*; and in 1816 he retired from general practice, graduated at St. Andrew's, and devoted himself to the treatment of the insane. He was prosperous and in general repute, till, in 1830, he was vehemently and very unfairly attacked by Mr. (afterwards Lord) Brougham, who was counsel for a person deemed insane.<sup>1</sup> Public opinion was, of course, set against him; but he lost nothing of his reputation in the profession, and in 1839 he was elected a Fellow of the College of Physicians, of which he had been a Licentiate since 1824. His writings, and

<sup>1</sup> It is but fair to say that, according to a short Memoir of Dr. Burrows which is in the library of the Medical and Chirurgical Society, Lord Brougham afterwards expressed himself as sorry for the harm that he had done "in the performance of a duty according to his instructions," and that he and Sir George Burrows acted together as good friends in the Council of the Society for the Diffusion of Useful Knowledge.

especially his "Commentaries on . . . . Insanity," 8vo, 1828, may still show that he fully deserved this honour.

Sir George inherited a good probability of long life and vigorous health. His father lived to seventy-six; his mother, whom he most resembled, to ninety; and though many of his father's ancestors died young, his mother was nearly related to the families of Hastings of Worcester and Druce of Dulwich, among whom have been some of the most remarkable examples of healthy longevity. His early education was at a school of good renown at Ealing, kept by Dr. Nicholas; and among his teachers was Professor Huxley's father, to whose lessons he ascribed the love of mathematics, which led to much of his success in later life. In 1819 and 1820, being destined for the medical profession, he attended Mr. Abernethy's lectures and dissected at St. Bartholomew's, and attended the lectures of Brande and Faraday at the Royal Institution. In 1821 his father determined to send him to Edinburgh, that he might there take his doctor's degree, and the day for his leaving London was fixed; but on the urgent advice of Dr. Latham, who pointed out the far greater value of an English degree to one who was to practise in London, the plan was changed, and he went to Cambridge and entered at Caius College.

There he worked hard, did well in the annual college examinations, was active in athletics, a good rower and cricketer, but in social life was deemed quiet and reserved. In 1825 he took his B.A. degree, passing as tenth wrangler, and was soon after elected a Fellow of his College. During his undergraduate-time he had been appointed to a Tancred Studentship, which involved the necessity of his taking the M.B. within the year after the B.A.; but he obtained some respite from this rule, took pupils, was a junior mathematical lecturer, studied what he could of medicine with the university professors, and passed the M.B. examination at some time in 1826. Soon after this, having saved money enough to enable him, with his Fellowship, to continue medical studies in London, he returned to St. Bartholomew's, was for twelve months one of Lawrence's dressers, and was a constant worker with Latham and Watson. Thus he went on till, having a good opportunity of travelling, he visited and studied at the Universities of Paris and Pavia and some of those in Germany. In



1829 he obtained at Cambridge a license to practise, and was admitted an inceptor candidate at the College of Physicians. In 1831 he took his M.D., and was appointed with Dr. Roupell to the Lectureship on Forensic Medicine, then first instituted at St. Bartholomew's. In 1832 he was admitted a Fellow of the College of Physicians, and was put in charge of wards prepared for cholera-patients in the epidemic of that year, the first time of its occurrence in England. In 1834 he was appointed the first Assistant-Physician, and took charge of medical out-patients, who were then, for the first time, dealt with as a separate class.

From this time onwards Sir George Burrows' career was one of constantly increasing success and professional distinction. It may be indicated by the offices to which he was appointed.

At the College of Physicians he was Gulstonian Lecturer in 1834; Croonian in 1835 and 1836; Lumleian in 1843 and 1844; Censor in 1839-40-43 and 1846; Councillor for five periods of three years between 1838 and 1870; President from 1871 to 1875. In the General Medical Council he represented the College, and was one of the Treasurers, from 1860 to 1863, and was President from 1864 to 1869.<sup>1</sup>

In the Hospital he became in 1834 sole Lecturer on Forensic Medicine, in 1836 joint Lecturer on Medicine with Dr. Latham, in 1841 sole Lecturer and full Physician,—appointments which he held till 1863, when, on his retirement, he was elected Consulting Physician.

In 1870 he was appointed Physician-Extraordinary to the Queen; in 1873, Physician-in-Ordinary. In 1874 he was made a Baronet.

He was President of the Medico-Chirurgical Society in 1869-71; President of the British Medical Association in 1862; was elected a Fellow of the Royal Society in 1847, and Honorary LL.D. of Cambridge and D.C.L. of Oxford, a member of the Senate of the University of London, and an Honorary Fellow of Caius College, Cambridge. He was a very active member, as his father had been, of the Society for the Relief of Widows and Orphans of Medical Men, and was for many years its President, as he was also of the British Medical Benevolent Fund.

<sup>1</sup> I am indebted for these and some more dates to Sir Henry Pitman; for other dates, and valuable aid on many points, to Dr. Martin and Mr. Willett.

This brief and swift recital of the appointments which Sir George Burrows filled may tell the general character of his professional life, and may be sufficient evidence of the esteem with which he was always regarded, and of the assurance that was felt that, whatever duties were assigned to him, he would do them well. All the high offices, all the honours conferred on him, seemed to come quite naturally and of course ; he never asked for one, or did anything on purpose to obtain one ; his having them excited neither jealousy nor surprise ; and herein may be at once the explanation and the chief lesson of his life. He had excellent mental power. He showed it in his university-career, and always afterwards ; but that which was yet more admirable and characteristic was his steadfast, resolute use of his power straight to the work he had to do. More enthusiasm or more enterprise might have made him a more impressive or more popular teacher, might have made him more keen in research, more successful in acquiring new knowledge ; but they might not have added to the general utility or the good influence of the long life which he spent in learning and teaching what seemed directly useful, in treating disease in the methods generally regarded as the best, and in discussing all manner of questions relating to his profession in senates, councils, and committees.

In accordance with these mental characters, his lectures were plain, judicious, and complete ; all that was most probable, all the best facts that he could learn in his practice or in a fair range of reading, he explained simply and in good English : he seldom suggested or discussed hypotheses. He was never dull, or cold, or trivial ; but he never seemed to wish to be thought brilliant, and he did not, like some of his early contemporaries, tell clever, or stupid, or dirty stories.

Similarly in his clinical teaching he was direct, accurate, and careful, pointing out all the chief or rare features of each case, and waiting patiently while his clinical clerks and others were recording them.

It was the same in his practice. I worked with him in the out-patients' room soon after his first appointment, and both then and always afterwards, alike in the Hospital and in private practice, he was distinguished by his earnestness and care. His mode of examining cases was so orderly that what he did was apt to look

like routine; but it was a routine of method, not of thinking; no case was dealt with lightly, or as if only just the same as many that he had seen before. His strong will had enabled him to cultivate all his sense-organs to an excellent accuracy; his memory of cases for comparison was clear; he studied each case thoroughly and deliberately, and, I think, rarely erred in diagnosis.

He was similarly judicious in his treatment of diseases. Certainly he never adopted any of the extreme methods which, in the long course of his practice, were in vogue, each extreme usually succeeding to its very opposite. He never bled excessively, or starved any one, or, except in some nearly hopeless case, gave great quantities of stimulants; he was never profuse with mercury or with iron, with antimony or opium. The means of treatment for which he had good evidence of probable utility, or which were employed by others whom he could trust, he used without question. He did not doubt that, as it was and is said, "Nature" alone often cured diseases, but he felt sure that usually "Nature" could be assisted, and he never left to its own course any case of serious disease or any distress that he believed he could alleviate.

He was alike in the Hospital and in private practice, careful, gentle, sympathetic, and to those whom he met in consultation always courteous and scrupulously fair. His practice was among the largest in his time, and had in it no feature of specialism, either social or pathological; his cases in it were as miscellaneous as in the Hospital, and were similarly treated. And equally in both, as, indeed, in all the habits of his life, he was exactly punctual, observing and upholding that which I believe is still regarded at St. Bartholomew's as a law not to be broken, though it be unwritten.

Sir George Burrows was not a frequent writer on medical subjects. The only book he wrote was "On the Disorders of the Cerebral Circulation," 8vo, 1846. The substance of it had been given in the Lumleian Lectures at the College of Physicians in 1843 and 1844, and its chief value was in the evidence which it gave of the error of the belief, then generally held, that the cranium being a complete case of bone, completely filled by the brain and its membranes, and excluding from them all atmospheric pressure, the quantity of blood circulating in the brain cannot be

materially increased or diminished by posture, bleeding, changes in the heart or breathing, or by any such means. The belief thus held was not only general, but was influential in the treatment of disease, leading some to hold that, so long as the skull was entire, no abstraction of blood, by any manner of bleeding, could have any effect on the blood-vessels of the brain, so as to lessen the absolute quantity of blood contained within them.

In opposition to this, Sir George Burrows showed, in careful experiments, testing those of Dr. Kellie on which chiefly the belief had rested, that the quantity of blood in the brain is materially altered by bleeding largely, and by posture and by suffocation; and that, admitting that the contents of the cranium must be always nearly the same, the variations in the blood may be balanced by those of the cerebro-spinal fluid.

As one reads this book one cannot but regret that he did not give himself more frequently to original research, for it is clear, critical, and definite, and it greatly helped to the correction of serious errors. But he was not fond of research; he preferred the daily business of practical life, and in it the use of the best knowledge he could gain from others' and from his own attentive observation. The only other essays, I think, that he published were two papers in the *Medico-Chirurgical Transactions*, one "A Case of Extensive Carcinoma in the Lungs," in vol. xxvii., the other on "Tubercular Pericarditis," in vol. xxx., and the articles on measles, scarlet fever, and hæmorrhage in Tweedie's "Library of Medicine." Besides these he published some clinical lectures in the *Medical Gazette*; and his first lecture on Forensic Medicine, which was also separately printed, is in the *London Medical and Surgical Journal* for February 4, 1832.

From all this I think it may justly be said that that which most marked Sir George Burrows' mental character, and contributed most to his professional success and to his influence and utility, was that, having a strong will and a strong, clear intellect, he applied them steadfastly to the plain daily duties of his life.<sup>1</sup> But let it be well understood that with all this he was not dull; he had none of that monotonous gravity with which some judi-

<sup>1</sup> Steadfastness and order seemed parts of his very nature. He had the same hatter and the same tailor for sixty-five years, and dealt with other tradesmen for more than forty.



cious and very earnest persons are apt to be too tedious. His manner and personal appearance were entirely opposed to this. He was tall, well-formed, with handsome and expressive features; his voice was clear, and he spoke without hesitation, briefly and to the point, and with an evidence of confidence which made every one ready to put confidence in him. In discussions he was keen and vivid, sometimes impetuous, but never dull; and in social life he was genial and hearty, a pleasant talker, and ready to enjoy wit or any story which was, as Germans sometimes advertise an evening entertainment, "*humoristisch und decent*." He was for some time President of the St. Alban's Club, and for many years Treasurer of the fund of the St. Bartholomew's Contemporary Club, which was established in 1830, and of which the annual dinners were continued till 1871, when the number of its members had fallen from 30 to 10. For some years afterwards he attended as an honorary member the dinner of the Junior Contemporary, established in 1839, which will this year hold its fiftieth annual meeting.

Sir George's domestic life was a very happy one, though saddened by the loss of two children who died in early life, and of three sons who attained to manhood. He married in 1834 the youngest daughter of Mr. Abernethy, a lady of charming personal appearance, clever, warm-hearted and affectionate, proud of her husband, and thoroughly loving him and their children, of whom there remain two sons and a daughter, Mrs. Alfred Willett. Lady Burrows died in 1882, and his sorrow and increasing age, and the beginning of the failure of his health made him more than content to be gradually relieved of the labour and anxieties of practice, and of all official duties. He did not formally retire from practice; he was glad that it gradually diminished; but till near the very end of life he could give good advice, and could discuss any question of professional interest. His old age was a period of slowly diminishing but never perverted power; and his mind, though it became less active, never deviated from its true and best characteristics. He retained, so far as he could, his old habits, and among them enjoyed the refreshment of his daily carriage-drive,—his faithful coachman, Cheston, who had driven him for forty-seven years, being always with him; and he remained studious, and read his Bible, and some of the best Latin classics, and of the



most renowned works on history and theology. He was always courteous, interested in the chief events of the time, and more than ever gentle and sympathetic. Thus he lived on, with very slowly failing power, till the foggy weather of the middle of November. Then some gouty troubles began to distress him, and soon, on the least exertion, urgent breathlessness, and at night fatiguing cough, and his strength now quickly failed. He watched it calmly. He felt, as he said once, "the end not far off: a few more leaves to turn, and then—finis." He was quite ready and content to die; but, to the last, he would be dressed every day, and be helped to his chair, and be in his usual sitting-room and be occupied. And so he would on the very day before his death, and with even more than his usual resolution; for he was to receive the Holy Communion; and when Canon Capel Cure came, he rose to greet him, and then sat and prayed and received the bread and wine, and his mind seemed so vivid, that some who had thought him quickly dying could hope that he might rally. But on the next day he became again more feeble, and he slept more and more, till, a few minutes after midnight, he ceased to live in this world.

In writing this memoir I have tried to say of Sir George Burrows' work and character no more than might be said by any one who had known him long and well. I have repressed all the words with which I might have tried to tell the intense regard I felt for him. It had gathered strength in the more than fifty years of our undisturbed friendship and in the friendships of our families, and had been made more intense by the gratitude with which I remembered his gentle skill and care in attending me through several perilous illnesses. Feelings such as these are not such as should appear in a biography, and I have repressed them; but here I may tell of them with thankful love.

# SAINT BARTHOLOMEW'S HOSPITAL REPORTS.

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## NOTÆ HARVEIANÆ.

BY

WILLIAM MUNK, M.D., F.S.A.

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That Harvey, the discoverer of the circulation of the blood, was for many years physician to St. Bartholomew's Hospital, is one of the most interesting facts in the history of that noble institution. Harvey was formally installed in the duties of his office of physician to St. Bartholomew's on the 13th October 1609; and on the 19th January 1632-33, when his duties to his sovereign, Charles I., and his attendance at court interfered with his attendance at St. Bartholomew's, the Hospital Court gave him an assistant in the person of Dr. Andrewes, deputing him to supply Harvey's place, "but without prejudice to him in his yearly fee or in any other respect." Harvey continued to be physician to St. Bartholomew's for many years after this, and would seem to have retired from it in or about 1643.

The history of Harvey may be said indeed to circle, next after the College of Physicians, around St. Bartholomew's Hospital. He was connected with it for the best period of his life, from the age of thirty-one to that of sixty-five, in all, thirty-four years, during two-thirds of which he was the one sole physician to St. Bartholomew's, and as such must have been intimately engaged in the daily work of the Hospital. Some idea of the interest Harvey took in St. Bartholomew's, and of his efforts for the better government of the house and its officers, may be formed from

Sir James Paget's "Records of Harvey,"<sup>1</sup> reprinted in the last volume of St. Bartholomew's Hospital Reports. In fine, in all histories of St. Bartholomew's, the name of Harvey must find a conspicuous place, and in like manner in all biographies of Harvey a prominent position must be accorded to St. Bartholomew's.<sup>2</sup>

In the minute and intelligent search which is now made into most of our public records and manuscript collections, some new facts relating to Harvey and his family have been discovered. These are not merely interesting in themselves, but they serve to supplement or correct several statements that have been made respecting him. The following notes, penned from time to time as I obtained a knowledge of the particular facts on which they are severally based, I now transcribe, in the hope that they may interest those readers of St. Bartholomew's Hospital Reports whose curiosity about Harvey has been stimulated by the recent reprint of Sir James Paget's most interesting "Records."

### I.—*Harvey's Father.*

Of Thomas Harvey of Folkestone, "yeoman Cantianus," as he is described in the books of Caius College, Cambridge, but little is generally known. That he lived at Folkestone and was twice married, that he had in all seven sons, of whom William, the physician, was the eldest, and three daughters, and that he died in June 1623, aged seventy-four, is the sum of what is told us of him. "Great men," writes Dr. Willis in his admirable "Life of Harvey," "seem in almost all authenticated instances to have had noble-minded women for their mothers;" and then, after a well-merited eulogium on Harvey's mother, based on the inscription to her memory in Folkestone church, adds, "We have not a word of his age or generation to assist us in forming an estimate of Harvey's male progenitor." But we *now* know that Harvey's father was a person of position and mark at Folkestone, for he was one of the Jurats<sup>3</sup> of that town; and further, that he was revered, consulted, and implicitly trusted by his sons. Of his numerous family of sons, the five youngest became merchants,

<sup>1</sup> Records of Harvey in Extracts from the Journal of the Royal Hospital of St. Bartholomew, by James Paget. 8vo. London, 1846.

<sup>2</sup> A good view of St. Bartholomew's Hospital as it was in Harvey's time, and when he was physician to it, is to be seen in Stow's "Survey of London," by Strype, vol. i. p. 184. That Hospital escaped destruction in the Great Fire, and was replaced in the first half of the last century by the present building.

<sup>3</sup> See the marriage-license of William Harvey, M.D., given below, p. 5.

and obtained large fortunes; and, as was related in the family, "they made their father treasurer of their wealth, with which he purchased lands for them, and lived to see them of far greater estate than himself." It is clear from this that the elder Harvey must have been a man of more than ordinary intelligence and judgment, and, as it would seem, must have resided during the later part of his life not at Folkestone, but in or near London, for the estates his sons acquired were not in Kent, but in London, Surrey, and Essex. We learn from Thomas Harvey's will below, which is now printed for the first time, that when he made it he was living at Hackney, and from it we should infer that he had been doing so for some time, probably for years.

There is, so far as I know, nothing to fix the date when he removed from Folkestone to London or its neighbourhood. His second wife, Joan [Halke], the mother of his sons, died 5th November 1605, and was buried at Folkestone. There would seem to have been nothing to keep him at Folkestone after the death of his wife, but much to attract him to London, where all or most of his sons were then or shortly afterwards settled and flourishing. It is probable, therefore, that he soon removed to town, to be amongst his sons, and aid them, as we have seen, in their investments. He died 12th June 1623, and was buried at Hackney the 17th of that month. The entry in the Hackney Register (for a copy of which I am indebted to the courtesy of the Rector, the Rev. A. Brook) is as follows:—

"Mr. Thomas Harvye gentleman was  
buried the xvijth daie of June 1623."

A portrait of Thomas Harvey is to be seen in the central panel over the fireplace in the dining-room of Rolls Park, Chigwell, Essex, which was one of the earliest estates acquired by his son Eliab. "It is certainly" says Dr. Willis, "of the time when he lived, and bears a certain resemblance to some of the likenesses we have of his most distinguished son."

The will of Thomas Harvey is at Somerset House, and is as follows:—

"In the name of God, Amen. The 12th daie of June Anno Domini 1623. I Thomas Harvey of the parishe of Hackney doe make this my will and testament. And first I do humbly cōmend my soule to God that gave ytt, by whose free mercie in the merites of Jesus Christ I hope to be saved. And my bodie to the earth to be buried with the rest of the familes of God.

"Touchinge my goods and chattells, I wish to be distributed in



legacies to the poore of the p̃ish of Newington<sup>1</sup> five pounds; to the poore of Foulkstone five pounds; to Mr. Paterson, minister of Foulkstone, fortie shillings; to Patience Penny twentie shillings; to the poore of Hackney fortie shillings; to Mr. Dalbyn twentie-two shillings; to Mr. Partridge twentie-two shillings; to Mr. Jacob, minister, twentie shillings; to James Adwicke, my servant, fortie shillings; to Henry Brockman twentie-two shillings; to Joseph Denn twentie-two shillings. To every one of my brothers and sisters sonnes, viz., to Thomas Harvey, to Thomas Nott, to Thomas Denn, to Vincent Denn, to every one of them twentie-two shillings. Also to my sisters daughters, viz., Jone, Elizabeth, and Maria Harvey; and to my sister Rolfe's daughters, viz., to Margerie, to Eden, and Em——; and to my sister Wood's daughters, viz., to Cicely, Amey, Joan, and Sara; and to my sister Dennis' daughters, viz., to Mary, Martha, Elizabeth, and Sara; to every one of the last recited eleaven shillings. Also to Richard Haulke and his children, and to Thomas Haulke's and William Haulke's children, to every one of them eleaven shillings apiece. To Mr. William Somner eleaven shillings; to Nicholas Marks twentie shillings; to George Smeede the some of twelve pounds; to Mary Godwyn, widowe, the some of fortie pounds; to Bartholomew Godwyn tenn pounds. Also I doe give unto my twoe grandchildren John Harvey and to Daniell Harvey the some of fiftie poundes apiece. And if either of them shall dye before they come to age, that then the survivor of my grandchildren to have the whole hundred pounds. Item I doe give unto my son John Harvey my capitall messuage and lande in the p̃ishe of Newington and Foulkstone or elsewhere, knowie by the name or names of West Dane or Arpinge, now in the occupation of John Pilchard and Nicholas Marke or their assignes, to be houlden to the said John and his assignes for ever. Also to Mary Foake, my grandchilde, thirtie-three shillings; to William Foake and to Maria Foake to either of them fiftie pounds, and in case one of them should dye, to the over liver of the said William and Maria Foake. Item I doe give unto my three youngest sonnes the some of one hundred pounds already in their hande, to be equally divided between them. Also I give to my daughter Julian<sup>2</sup> the some of fortie pounds; to her eldest sonne Thomas Cullen the some of fortie pounds; to Marie Cullen the some of thirtie pounds, to be paide into her at the age of eighteen yeares; to William and John Cullen tenn pounds apiece, to be paide at the age of twentie and one yeares. Item I will one hundred pounds to be spent on my funeral rites. All these petty legacies herein mentioned with some others named by me on my death-bed, I desire may be accepted to buy some small thinge by every one of them to be worne in remembrance of me.

"Lastly, I doe make and ordaine my sonne *William Harvey* my sole executor of this my last will and testament, cōmending him and all the

<sup>1</sup> Newington-next-Hythe, in the hundred of Folkestone.

<sup>2</sup> His first-born and only child by his first wife,\* Mary Jenkins. She married Thomas Cullen.



rest of them to the blessings of Almighty God, desireing them to live in his fear and unite with one another fast knitt together, as they may be evermore an helpe one to another.

"This his last will.

— THOMAS HARVEY.

"Witness hereunto

DA. DOLBEN Vi of Hackney.

"Probatum fuit testament<sup>m</sup> suprascriptum apud London :  
decimo sexto die mensis Iulii A.D. 1623 juramento *Will<sup>i</sup>*  
*Harvey* filii dicti defuncti et execut."

## II.—*Harvey's Marriage.*

It is correctly stated in the biographies of Harvey that he was married in November 1604 to a daughter of Dr. Lancelot Browne, physician to Queen Elizabeth. From Harvey's marriage-license, particulars of which have recently appeared in the twenty-fifth volume of the Harleian Society's publications, we learn that Harvey at the time it was granted was living in the parish of St. Martin's, Ludgate, and near, therefore, to St. Bartholomew's Hospital, to which he subsequently became physician; and that his future wife, whose Christian name, Elizabeth, I meet with for the first time in it, was of St. Sepulchre's parish, and that they were to be married in St. Sepulchre's church. The allegation is as follows:—

"1604, Nov. 24. William Harvey, Dr. of Physic, Bachr., 26, of St. Martin's, Ludgate, and Elizabeth Browne, maiden, 24, of St. Sepulchre's, dau. of Lancelot Browne of the same, Dr. of Physic, who consents; consent also of Thomas Harvey, one of the Jurats of the town of Folston in Kent, father of the said William, at St. Sepulchre's, Newgate."<sup>1</sup>

Doubtless they were married at St. Sepulchre's, but the registers of the parish unfortunately do not reach so far back. The church suffered in the Great Fire, and it is thought that the registers were then destroyed.

Harvey had been admitted a candidate of the College of Physicians a few weeks only before his marriage, namely, on the 5th October 1604, and had doubtless acquired a house and establishment in St. Martin's, where it is probable he remained during the early and more active period of his professional life. The later portion of his life he is known to have passed as the guest of one or other of his merchant brothers, at Cockaine House in the City, at Lambeth, Roehampton, Combe, &c. The fact that Harvey's house was in St. Martin's, Ludgate, and within such easy reach of St. Bartholomew's, may explain what comes

<sup>1</sup> Allegations for Marriage Licenses issued by the Bishop of London, vol. i. p. 291.

out in Sir James Paget's "Records,"—that he did not at any time occupy the house in or by the Hospital which had been set apart for the physician.

### III.—*Harvey's Visits to Italy.*

Aubrey states that "about 1649 he [Harvey] travelled again into Italy, Dr. George, now Sir George Ent, then accompanying him." Dr. Willis expresses a doubt, and rightly so, as to the date assigned by Aubrey for this visit. Harvey's first visit to Italy was as a student to Padua, where he remained for five years. He was certainly again in Italy in 1636, in the course of his attendance on Thomas Howard, Earl of Arundel, in the extraordinary embassy to the Emperor of that year. We now know from the Pilgrim's Book of the English College of Rome,<sup>1</sup> that Harvey was in Rome in the course of this journey, and that he dined in the refectory of that College on the 5th of October 1636, in company with Dr. Ent. Ent had then but recently graduated at Padua; he did so the 28th April 1636, after a residence of five years in that university. As the embassy left England the 7th April 1636, and Harvey was at Nuremberg in May,<sup>2</sup> Ent cannot have accompanied Harvey from England to Italy. Whether Ent returned with him is another question. He may not improbably have done so. That Ent was in England the whole of 1649, the year named by Aubrey, is beyond doubt. He was censor of the College of Physicians in that and the previous year, and the annals of the College show that he was in England throughout the whole of both of them. Aubrey's date of 1649 must be given up, and we may confidently substitute 1636 in its place.

### IV.—*Harvey's Writing.*

"Specimens of Harvey's writing are very rare," says Dr. Aveling in his interesting "Memorials of Harvey," 8vo, Lond., 1875, wherein he gives an account of all the specimens of Harvey's writing that were then known to him. But he omits the two in the College of Physicians.

One of these is on the back of a memorandum, giving an account of the sums of money (arrears of pension as physician to the King) due to Harvey out of the King's Exchequer, which he (Harvey) had docketed as follows:—

<sup>1</sup> Records of the English Province of the Society of Jesus, by Henry Foley, S.J. 8vo. London, 1880, vol. vi. p. 614.

<sup>2</sup> The Works of William Harvey, Sydenham Society. 8vo. London, 1847, p. xxviii.

Money dew out the  
Exchequer for my pension  
21 April 1642  
and also since  
for my pension  
for 400<sup>li</sup> p. ann.

This document was given to Dr. Macmichael about the year 1830 by Mrs. Lloyd, the eldest daughter of Admiral Sir Eliab Harvey, the last male of the Harvey family, and was presented by Dr. Macmichael to the College.

The second specimen is a letter from Harvey to Dr. Baldwin Hamsey, which I discovered about ten years since, as I was looking through a volume of letters to and from Hamsey, which is preserved in the manuscript closet of the College of Physicians. This letter, which I showed to Dr. Willis and helped him to decipher, is printed at p. 296 of his "William Harvey." It is, however, so interesting, and Harvey's *letters* are so exceedingly rare—(Dr. Aveling says of the one he prints, "This is the only letter in his own handwriting of which we have any knowledge")—that it may be produced here.

"Vir doctissime, humanissime, mihi carissime! / Fœmina videatur mihi tamen ex ægri relatione, qua habitu et victus consuetudine [salvo tuo iudicio] esse à passione colica eaque calida et biliosa. Esto quod antehac evacuat, fuit pix, tamen jam subesse vel hippocondrii vel regione epigastrica apostema haud credo: tactu enim aliquid percepissem vel tumidum vel tensum. Laudo itaque tuum de sanguinis missione iudicium; plethoricum ejus corpus liberaliori victui deditum, calidum, robustum, et assuetum id postulat; laudo præterea evacuationem cum pillulis Chologogis, addit: Euphorbii ʒss multum enim præstat in sedandis doloribus cholicis—Laudo frequentum usum pulveris ex Ebore et Calcaneo Cervi. Reliqua tuo relinquo consilio.

"Vale, mi amantissime,

Tuus ex anima,

GUL. HARVEIUS."

Harvey, it will be seen, had confidence in the heel-bone of the stag—Calcaneum Cervi—upon which subject Dr. Church has given us some interesting notes in the last volume of St. Bartholomew's Hospital Reports.

Another sample of Harvey's writing, if at any time needed for comparison or otherwise, is to be found in his will at Somerset House—the original, of course, not the engrossed office copy, which is always produced and tendered. In it (as given by Dr. Willis in the introduction to his translation of Harvey's works for the Sydenham Society, p. xciii.) he says:—

"Thus have I finished my last will in three pages, *two of them written with own hand*, and my name subscribed to everie one, with my hand and seal to the last. WILL. HARVEY."

It would be interesting to compare the writing in the will with that of the "*Prælectiones Anatomicæ Universales*" in the British Museum, the facsimile of which has recently been published—the last-named penned in 1617, when Harvey was thirty-nine years of age, the other when he was an advanced septuagenarian. But I have not done so.

#### V.—*Harvey's Habits and Peculiarities.*

Among some papers at the College of Physicians relating to Harvey, which were collected by Dr. Macmichael, is one in the handwriting of the celebrated Dr. Heberden, the author of the "*Commentarii de Morborum Historia et Curatione*." It is as follows:—

"1761, May 29th. Mrs. Harvey [great-niece to Dr. Harvey] told me that the Doctor lived at his brother's at Roehampton the latter part of his life. That he used to walk out in a morning, combing his hair in the fields.

"That he was humoursome, and would sit down exactly at the time he had appointed for dinner, whether the company were come or not.

"That his salt-seller was always filled with sugar, which he used to eat instead of salt.

"That if the gout was very painful to him in the night, he would rise and put his feet into cold water."

This interesting memorandum is enclosed in a paper on which Dr. Macmichael has written as follows:—"This paper was given me by Dr. Heberden,<sup>1</sup> April 1831, who told me it was a memorandum written by his father, the author of the Commentaries. W. MACMICHAEL. Apr. 7, 1831."

Harvey's treatment of gout in his own person, by plunging his feet into cold water, was so peculiar that we may be sure it attracted the notice of his contemporaries, medical and other. But it would seem in the course of time to have been forgotten, except among his own family, by whom it, with other small peculiarities, was remembered and traditionally handed down among themselves.

It was mentioned, we have seen, to Dr. Heberden by a great-niece of Harvey in 1761, and Dr. Heberden, in the ninth chapter of the "*Commentarii*" [de Arthritide], writes thus:—"Magnus ille Harveius circumeuntis sanguinis repertor *ut a propinquis*

<sup>1</sup> Dr. William Heberden, the younger, who died 19th February 1845, aged 78.



*ejus accepi*, protinus ut podagram advenientem sentiebat, crus affectum in frigidam immittere solitus est et eo pacto dolorem avertere."

The "Commentarii" were not published until 1802, a year after their author's death, in his ninety-first year, but the fact before us—the treatment of gout—had become known to Dr. Lawrence, the author of the elegant Life of Harvey in Latin prefixed to the College edition of his works,<sup>1</sup> and was made public by him for the first time in 1766. Lawrence puts it thus:—"Cum in extrema senectute perditæque valetudine esset, iracundior paulo fuisse dicitur, atque doloris adeo impatiens, ut, sæviante morbo articulari, *partem malo tentatam in frigidam immergere soleret*" (p. xxxvii.).

Dr. Lawrence and Dr. Heberden were friends, colleagues in the College of Physicians, and near neighbours, for in 1766, and for some years before, Dr. Lawrence was living in Essex Street and Dr. Heberden in Cecil Street, both of them leading out of the Strand; and the former of these, writing in 1766 or thereabouts, undoubtedly availed himself of the interesting anecdote which Dr. Heberden had received but five years before from Mrs. Harvey. The same thing is told, and more fully, by Aubrey, a friend of Harvey, who helped to carry his body into the vault at Hempstead. Aubrey's interesting but gossiping account of Harvey remained long in MS. in Oxford, but unknown or forgotten, and was published for the first time in 1813 by one of my own most valued friends, the late Dr. Bliss. Aubrey's account is as follows:—

"He [Harvey] was much and often troubled with the gowte, and his way of cure was thus: he would then sit with his legges bare if it were cold on the leads of Cockaine house, putt them into a payle of water till he was almost dead with cold, and betake himself to his stove, and so 'twas gone."

No physician of the present day would advise such a treatment for gout; and the judicious and cautious Heberden, to whom we really owe the anecdote, adds, "I neither recommend Harvey's example nor propose it to others for imitation, although he lived to his eightieth year, and died not so much from disease as from old age."<sup>2</sup>

<sup>1</sup> Guilielmi Harveii Opera Omnia a Collegio Medicorum Londinensi edita MDCCCLXVI. Lond. 4to.

<sup>2</sup> "Nollem laudare Harveyi exemplum et aliis ad imitandum proponere; quamvis ad octogesimum annum vixerit, et non tam morbo quam senectute extinctus sit."—Cap. ix. de Arthritide.



VI.—*Harvey's Death.*

Aubrey's account of Harvey's death is as follows:—

"The manner of his dyeing was really and *bona fide* thus, viz.: the morning of his death, about ten o'clock, he went to speake, and found he had the dead palsey in his tongue; then he sawe what was to become of him, he knew there was then no hopes of his recovery, so presently sends for his young nephews to come up to him, to whom he gives one his watch, to another another remembrance, &c.; made sign to Sambroke, his apothecary in Black Fryars, to lett him blood in the tongue, which did little or no good, and so he ended his dayes."<sup>1</sup>

And elsewhere,<sup>2</sup> when speaking of Cockaine House, his brother Eliab's residence in the City, he says:—

"His [Harvey's] chamber was that room which is now the office of Elias Ashmole, Esq., *where he dyed*, being taken with the dead palsey, which took away his speech; as soon as he was attaqued, he presently sent for his brother and nephews, and gave one a watch, another another thing, &c., as remembrances of him."

Precise and circumstantial as is this account, it is not to be relied on in all its details. It seems certain that Harvey died not at Cockaine House, as Aubrey asserts, but at Roehampton. As we have seen above, Mrs. Harvey told Dr. Heberden that "the Doctor lived at his brother's at Roehampton the later part of his life;" and that he died there seems to be established by the official entry in the books at Somerset House when probate of Harvey's will was granted to his brother Eliab. The actual entry, for a knowledge and copy of which I am indebted to Mr. J. C. C. Smith, the courteous superintendent of the Literary Department of H.M. Court of Probate, is as follows:—

"May 1659. The second day was proved the Will and Codd. anext of Dr. Wm. Harvey, late of the parish of St. Peter's poore, in London, *but at Roehampton in ye County of Surrey dec*, by the oath of Eliab Harvey, the brother and sole executor, to whom adcon was cōmitted, he being first sworne truly to ad<sup>ter</sup>."

How far this may go to vitiate the other statements of Aubrey in respect of the circumstances of Harvey's death, I do not presume to say; but, with Dr. Willis, I do say, "I have found so much to excite doubt in Aubrey's notes, that I greatly suspect

<sup>1</sup> Letters Written by Eminent Persons and Lives of Eminent Men, by John Aubrey, Esq. 8vo. London, 1813, vol. ii. p. 385.

<sup>2</sup> *Ibid.*, p. 380.

the accuracy of his statements.”<sup>1</sup> It is probable that Harvey’s body on its way through London from Roehampton to Hempstead, in Essex, was brought to Cockaine House, and placed in the room there referred to by Aubrey. There it may have rested for many days, for more than three weeks elapsed between Harvey’s death and the removal of his remains from London. He died on the 3d June, and his body was taken from London on its way to Hempstead on the 26th. The Fellows of the College of Physicians had notice on the 25th of June 1657 to attend the funeral of Dr. Harvey in their gowns on the following day—“Comitia solennia trimestria 25<sup>o</sup> Junii 1657. Monentur socii ut togati prosequi velint exequias funeris Dris. Harvæi postero die celebrandas.” It was probably from Cockaine House that the Fellows did so, and they followed the body far beyond the city walls, on the way to its place of interment in Essex.

Hamey, in his “Bustorum aliquot Reliquiæ” (one of the most interesting manuscripts belonging to the College of Physicians), records Harvey’s death as follows:—

“Guilielmi Harvæi fortunatissimi anatomici desiit sanguis moveri tertio Idus Junii ’57 cujus alioqui perennem motum in omnibus verissime asserverat.”

And in the margin he adds, “Sepultus 26 Junii 1657, quo die inauguratus est Cromwellus.”

But how can this be, seeing that “Oliver Cromwell assumed the title of the Lord Protector of the Commonwealth of England, Scotland, and Ireland on the 16th of December 1653, with the designation of His Highness?”<sup>2</sup> On this Dr. Macmichael writes as follows:—“To explain what Hamey says as to Cromwell’s inauguration, it must be observed that the usurper had been declared Protector four years before, and had been then installed into that high office with great solemnity. In the year 1657 the title of king was offered him, which, after an agony and perplexity of long doubt, he felt obliged to refuse, though the representatives of the nation in the most solemn manner tendered the crown to him.” “The Parliament, when the royal dignity,” says Hume, “was rejected by Cromwell, found themselves obliged to retain the name of a Commonwealth and Protector; and in order to sanctify the government by a seeming choice of the people, framed what they called *an humble petition and advice*; by this deed the Protector had the power given

<sup>1</sup> William Harvey: a History of the Discovery of the Circulation of the Blood. 8vo. London, 1878, p. 179, note.

<sup>2</sup> Sir Harris Nicholas’s Chronology of History, p. 321.

him of nominating his successor, had a perpetual revenue assigned to him, together with other privileges. When this deed was accepted by the people, Cromwell, as if his power had just commenced from this popular consent, was anew *inaugurated* in Westminster Hall, after the most solemn and most pompous manner." So far Hume. It was to this second ceremony, continues Dr. Macmichael, that Hamey alludes.<sup>1</sup> But in respect of Hamey's statement above, I venture to remark, *pace tanti viri*, that Harvey was not really buried, "sepultus," on the 26th June. His body was borne from London on that day; the "exequiæ funeris" of the College Annals<sup>2</sup> were then in part performed; but there is no record—for the parish register does not help us—of when it reached Hempstead, some fifty miles distant, nor of the precise day when it was deposited (sepultus) in the Harvey vault there.

Dr. Macmichael<sup>3</sup> says:—"Harvey, notwithstanding the counter-assertions of Lawrence and all his other biographers, certainly died, as Hamey says, in 1657, and was buried on the 26th of June of that year." This is undoubtedly true of the year, and the annals of the College of Physicians, as we have seen above, testify to it. Dr. Lawrence's error<sup>4</sup> is in the copy of the inscription on the mural monument to Harvey at Hempstead, where MDCLVIII. has (*per incuriam*) been written for MDCLVII., or rather CIOIOCLVII., for so it really is on the monument. But Dr. Lawrence is correct enough elsewhere when *describing* Harvey's failing health and death. At p. xxxiii. he tells us how Harvey, in 1656, gave to the College his patrimonial estate, and then goes on to say:—"Jam Harveius annum ætatis septuagesimum nonum agebat, multa ingravescente ætate a morbis passus. Hinc indies infirmiore valetudine usus, fatiscente tandem naturâ die Junii tertio *anni insequentis* [*ergo* 1657] æquo animo cessit, animamque amicis desideratissimam efflavit." Too much, as it seems to me, has been made of this one error, and possibly, after all, a typographical one.

<sup>1</sup> Lives of British Physicians, London, 1830, p. 55.

<sup>2</sup> No wonder that the College minute is strictly accurate, for Sir George Ent, one of the most ready and accomplished Latinists of his time, was then the registrar, and therefore its author.

<sup>3</sup> Lives of British Physicians, p. 56.

<sup>4</sup> Harveii Vita, p. xxxiii.

ON  
MALIGNANT (HÆMORRHAGIC) DIPHTHERIA.

BY  
SIR DYCE DUCKWORTH, M.D.

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I think it right to record the particulars of two cases which have been under my care during the past summer, and have illustrated the very grave and formidable features of malignant diphtheria. Such cases, happily, are not common.

The first case was that of S. W., a young man, æt. 19 years, who was admitted into John Ward under my care on June 3, 1887. He was a bricklayer's apprentice.

He had always been robust, and was well developed and well nourished. The history to be obtained was brief. Five weeks previously he had run in a flat race, and was much exhausted afterwards. For two weeks before admission his friends had noticed that he had become pale. Seven days previously he had to leave his work and take to bed. Twice during this period he had spat some blood, and also bled from the nose. He had felt light-headed and experienced dimness of eyesight during the previous week. He had made no complaint of sore throat.

The family history was satisfactory. His father was living; his mother had died of inflammation of the lungs; his brothers and sisters were healthy, and there was no history of consumption or of hæmophilia.

Two weeks before admission he had been employed in releasing a choked and foul drain.

On coming to the Hospital, he was found to be very pallid and anæmic. Pulse 120, sudden, sharp, and quickly collapsing. Temperature 101°. Tongue pale and flabby. Fauces anæmic; a petechial patch in the mucous membrane over hard palate. On right tonsil there was a small sloughing patch, dirty white in colour. Breath very offensive. Gums very pale, not spongy, with small clots of blood at roots of the teeth, and scattered



petechiæ subjacent. No enlargement of glands at the angles of the jaw. The pupils were large, but reacted readily to light. In the chest there were no very noteworthy signs. Air-entry was good all over, and there were no superadded sounds on respiration. The heart's apex was in natural place, but the area of præcordial dulness was replaced by tympanitic resonance. The cardiac sounds were sharp and sudden, and a soft soufflé replaced the first sound in the area of the pulmonary artery. There was a loud hum in the jugular veins. The liver and spleen were impalpable. Over the abdominal wall were a few small purpuric petechiæ, also some over the loins. The same were found on the arms, and on the right arm was a discoloured hæmorrhagic patch.

On examining the blood, no excess of leucocytes was found. Some of the red globules appeared small and misshapen. The red numbered only 2,000,000 per cubic millimetre, and the white cells were twice too numerous.

The urine was void of blood, albumen, and glucose; sp. gr. 1017.

The first night the temperature rose to  $102.4^{\circ}$ , and a fair amount of sleep was secured after fifteen minims of laudanum.

On examining the eyes, it was found that large hæmorrhages had occurred into the retinæ. Discs anæmic and well defined. The left fundus was best seen. The veins were extremely dilated. To its inner side a large chocolate-brown mass with smaller similar masses were seen.

The treatment at first consisted of sulphate of magnesium with sulphuric acid (the bowels being confined), and milk-diet with pudding. Later on, half a pint of beef-essence was given, two eggs, and two ounces of brandy. The fauces were painted with glycerine of carbolic acid, and five grains of quinine were given four times daily out of the nitro-hydrochloric acid draught of the Hospital.

Blood continued to discharge both from the nostrils and the mouth, and clots were frequently withdrawn from the former. The hæmorrhage, though constant, was not profuse, and it was obvious that the profound general anæmic state was unexplained by the amount of blood lost. The anæmia made rapid progress. There was no mental confusion, but a good deal of restlessness and distress. On the night of the 4th June the temperature rose to  $103.6^{\circ}$ , falling to  $102.4^{\circ}$  on the morning of the 5th,  $103.6^{\circ}$  on the night of that day, and  $100.2^{\circ}$  on the morning of the 6th. The bowels not having acted, a dose of house-medicine was given, and a solid motion was subsequently passed. The hæmorrhage slowly increased from the nostrils and mouth, the



patient constantly pulling clots away from the latter cavity. A more watery blood issued from the nose. No fœtor perceptible. During the night of June 6 more than half a pint of blood was thus lost. The slough on the right tonsil had slightly extended. The left tonsil and the fauces generally were clear of any membrane, but some hæmorrhagic patches were present, giving a speckled appearance. Vomiting occurred occasionally, curdled milk and blood, the latter apparently swallowed, being rejected. Progressive anæmia and exhaustion. The urine remained free from blood and albumen. On the night of the 6th June the temperature rose to  $101.8^{\circ}$ , on the morning of the 7th it was  $100.2^{\circ}$ . June 8.—Much drowsiness and languor. Refused to open his mouth. Breath fœtid with gangrenous odour. Anæmia extreme. The urine accumulated in the bladder during the last three days of life, and had to be withdrawn at intervals. The temperature gradually fell to normal. Stupor increased, and death occurred on the 9th of June, six days after admission.

The body was examined on the following day. All the organs were blanched; especially was this noted in the heart, liver, and kidneys. In the pericardium were small capillary hæmorrhages, and others were also found in the outer portion of the muscular walls. The fibres were pale and soft, but no "tabby" striation was visible. Valves natural. There was nothing very noteworthy about the kidneys; one, however, appeared to be swollen and somewhat indistinct in structure. The liver and spleen were neither enlarged. The tonsils were both enlarged and gangrenous, but the destructive process had not entirely involved either. The surfaces were rough and fungating, and on section they had the appearance of pickled walnuts. There was no necrosis of the hard palate. One cervical lymphatic gland was enlarged. No membrane was found anywhere.

When the fauces were last seen, on the 7th of June, the left tonsil was quite unaffected. The sloughy patch on the right tonsil was not then gangrenous. Mr. D'Arcy Power kindly examined sections of the tonsils, and found micrococci in abundance. I shall not, however, venture to speculate on their particular significance in relation to the case.

The second case was that of W. T., a boy aged  $4\frac{1}{2}$  years. He was taken into Elizabeth Ward on the 29th of June, and was, though feeble, able to walk to the Hospital. The history was that he had been quite well seven days previously. His illness came on gradually with headache, but he was not very ill till the 28th of June. There was no illness at his home. He had formerly had measles. The previous night he had vomited. There had been no complaint of sore throat. On admission he

looked very ill and pale. The breath was offensive. The lips were cracked and bleeding. The glands at the angles of the jaw were swollen, and there was a brawny collar from ear to ear. A discharge of very foetid watery blood issued from the nostrils. On the soft palate were shreds of friable membrane. There was a greenish ecchymosis on the left temple, and another on the right buttock. Pulse 120, feeble. Temperature  $99^{\circ}$ . Respirations 24. The lungs were everywhere resonant, and there were no superadded sounds on auscultation. The heart-sounds were clear, but feeble. No stridor. Several purpuric patches were found on the legs, none so large as a threepenny-piece. The urine could not be saved. He was treated with constant carbolic acid spray (1 in 20) from a powerful steam-kettle, and tinctures of perchloride of iron and of nux-vomica were given every fourth hour. He took abundance of milk, beef-essence, eggs, and brandy. The nostrils were syringed with lotion of permanganate of potassium. The highest temperature registered was  $99.4^{\circ}$  on the night of his admission. He ceased to take food readily, and was fed by nasal tube. On the 30th June he had clearly lost ground, was more anæmic and exhausted. The odour from mouth and nose was gangrenous. He coughed up a small fragment of membrane. Pulse 160, feeble. Urine passed with motions into the bed. Later he became unconscious, and died quietly on the evening of the 30th, the last temperature recorded being  $97^{\circ}$ . The body was examined next day. The fauces were covered with shreds of brown gangrenous membrane. Both tonsils were ulcerated and gangrenous. The larynx and trachea contained some shreds of brown, dirty-looking membrane adherent to their walls. One bronchus was plugged with membrane. The mucous surfaces subjacent to the membrane were distinctly lacerated. The heart was natural. The lungs presented, on section, a remarkable appearance, many patches of hæmorrhage being present throughout, true extravasations into the parenchyma and alveoli, parts being completely solid and dark purple in colour.<sup>1</sup> There were some small hæmorrhages into the pleuræ. The kidneys appeared natural, likewise the liver. The spleen was not enlarged.

These cases illustrate, I believe, the mischief wrought by malignant diphtheria. The patients were in each instance over-

<sup>1</sup> Dr. Ormerod, who made the post-mortem examination, has kindly furnished me with his account of the appearances presented by sections of the hæmorrhagic lung-tissue, and submitted one to me. He found the alveoli crammed with red blood-globules. There was no appearance of clotting, nor of inflammatory effusion. The alveolar walls were natural, being neither thickened nor broken down by the hæmorrhage. The bronchi did not contain blood.

come and borne down by an overwhelming dose of the specific poison, and thus the course of the disease was closely analogous to that which is met with in cases of malignant variola, measles, or scarlet fever. The fatal result was not due to angina or to mechanical causes, as in ordinary grave cases. Profound anæmia, hæmorrhagic tendency, and asthenia were the leading clinical features in each case. It is noteworthy that in neither instance was any complaint made directly of sore throat. The anæmia was due to blood-spoliation, and not to actual hæmorrhage. Both cases well illustrated what the older physicians termed "a dissolved state of the blood." The rapidity of the onset and progress of the gangrenous change was very remarkable. I can find no very detailed recent accounts of similar cases. They have been described by various writers from the earliest time under various names. The "putrid sore throat" probably included cases such as these.<sup>1</sup> Oërtel<sup>2</sup> alludes to them, but remarks that "only in the rarest cases does gangrene occur." He mentions the capillary hæmorrhages in the fauces and mouth, the brawny swelling in the neck, and the marked pallor which occurs. He also alludes to the presence of hæmorrhages in the pleuræ, peri- and endocardium, and under the capsule of the liver. It is interesting, further, to find that he has noticed the exemption of the spleen from any apparent participation in these cases, having met with only slight enlargement with a normal appearance of its parenchyma.

It is well ascertained that nasal diphtheria is commonly of grave import, and in both these cases there was discharge of foetid and bloody fluids from the nares. The enlargement of the cervical glands is not constant in these cases; it was absent, so far as could be ascertained, in the first case, but well marked in the second one. Morell Mackenzie<sup>3</sup> states that gangrenous diphtheria is very rare in this country. It appears to be met with sporadically, and seldom occurs during epidemics. The absence of renal complication was noteworthy. Although the urine could not be examined in the second case, the kidneys appeared natural. It might have been expected that albuminuria, if not hæmaturia, would occur in such cases.

The absence of any great degree of pyrexia is also worthy of

<sup>1</sup> Dr. John Fothergill gave an account of similar cases in his "Treatise on the Sore Throat attended with Ulcers," published in 1748, vol. v. pp. 352 and 372 of his works, edited by Lettsom. London, 1783. Such cases are also described by Huxham in "A Dissertation on the Ulcerous Sore Throat," pp. 20, 23. London, 1759. In some of them the symptoms appeared to indicate the presence of scarlet fever poison.

<sup>2</sup> Ziemssen's *Cyclopædia*, vol. i. p. 641.

<sup>3</sup> *Diphtheria, its Nature and Treatment.* London, 1879, p. 31.

note ; and here the rule appears to hold good both for less grave forms as well, as for this, the gravest, that no high temperature usually prevails in diphtheria.

The occurrence of this untoward form may be due either to an overdose of the specific poison, or to some special proclivity and vulnerability on the part of the patient. In both the instances here recorded, the patients had been apparently healthy and well nourished, and no direct contagion was traceable.

The parts implicated in the second case are preserved in the Museum, and Mr. Godart made an excellent coloured drawing of them while recent.



# ON THE COMMENCEMENT AND THE END OF INSANITY.

BY

T. CLAYE SHAW, M.D.

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In reading the accounts of the previous history of patients admitted into an asylum for insane persons, it is a very frequent thing to meet with an urgent appeal for the early recognition of the necessity for placing the patient under treatment. If the actual time of the recognition of the most prominent symptoms be taken, we find that, as a rule, the friends do take the earliest opportunity to call in medical aid, and it is because of the apparent suddenness with which a person becomes insane that I would call attention to the question. The sudden development of insanity is one of the most curious and distinctive features of the disease. I believe that up to a certain point there may be what are called early or premonitory symptoms, during which the person's conduct is peculiar, different from what it usually is, and that his actions may be even influenced to some extent; but there is no actual insanity present, though it may at any moment be developed. Up to the time when it is developed, the person with all his peculiarities is a responsible being and retains his will; after the development of insanity, he is a machine, at the guidance of any impulse or impression that may arise, and he is without the circle of the influence of his will.

If we study the history of first attacks, as obtained from the friends or from the patients themselves after recovery, we may gather that though some alteration in the usual course of the individual's action was noticed, yet he still was able to perform rational acts, to talk coherently, and to behave decently, whilst his deviation from his usual diligence or punctuality was ascribed to some bodily ailment. All at once, however, they recognise that the patient is insane from the sudden develop-



ment of an extravagant or violent act, or from the sudden utterance of a delusion or the declaration of a specific hallucination. Up to the time of this prominent displacement of mind, the person might have been in the early stage of an attack of any other disease than insanity, and it is very doubtful if even a specialist would, in a large proportion of cases, be able to say what the sequel of the prodromata would be, or even granting that he recognised the early on-coming of a brain attack, of what form it would be. The testimony of patients is that up to a certain point they could control themselves, but that a time came when either they remembered nothing afterwards, or that after that moment they could not help what they did. It doubtless occurs to many persons to be in the course of their lives more than once on the verge of an attack of insanity. They are mixed up in some great worry, losing sleep probably at night, and feel themselves being drawn into a position of helplessness which they cannot resist; to use their own expression, they "feel as if they would go mad;" and so they actually would, if the worry did not cease or the sleep return, or if by hereditary weakness they were incapable of enduring a fair share of mind-strain.

The difficulty is that there are no means of ascertaining the tension that may be borne without danger of the strain being converted into rupture. Though immediately consequent, the one on the other, the vital difference between the two states is inconceivable, and in the majority of cases the individual is no more able to tell what has been his mental condition from the moment of becoming insane to that of his recovery, than was Lazarus to state his experiences of the state after death when he was restored to life. Just as no one knows the exact moment when he goes to sleep, neither does he recognise the time when he becomes insane. The shyness and reserve that many patients on recovery show when interrogated about their feelings and promptings during the insane state are, I believe, due not so much to sentiment about referring to acts which they performed when their reason was not under control, as to ignorance of what has really happened.

In epilepsy the sudden loss of consciousness and the annihilation of intelligent brain-action are conspicuous, and though an attack of acute mania is somewhat different in its manifestations, I have no doubt that the divergence is more apparent than real, and that in many respects they resemble each other, notably in the suddenness of the accession of symptoms, in the real unconsciousness that may be traced, and, as we shall see later on, in the suddenness of the recovery. The incoherence and the crowd of fantastic delusions of a person in the state of acute mania are

only another form of the "reflex automatism" of true epilepsy. Some of the most instructive cases in asylums are those of "recurrent insanity;" for here the patient is well under observation, and the period of quiescence and the moment of change to acute manifestation can be fairly accurately noted. There are numbers of these patients in all asylums who are to all intents and purposes quite sane, but who may any moment develop a repetition of the insane state; and as no one can tell how soon this may occur, they are considered as not cured, and must remain under observation a considerable length of time, until indeed experience gives the probability that no recurrence need be feared. I had an experience of this a short time ago in the case of a female patient, the subject of recurrent attacks of violent mania. This patient was, I know, quite well when put to bed one evening, when suddenly, without any warning, she commenced running about the dormitory and screamed loudly. Her attack lasted several days, but she could give me no account of it afterwards. It does not appear that there is any special connection between what may be called special social circumstances and an attack of insanity when once the brain has been affected. Here, too, mania and epilepsy seem allied. I have known attacks of violent mania to recur apart from all considerations of worry or excitement, and even when the circumstances of the patient seemed more favourable to mental quietude. The curious thing is that persons who have experienced already an attack of acute insanity will recognise when they are on the verge of another. They will try and shake off the feelings that they know by experience presage the attack, and will argue correctly on their position, and perhaps request measures to be taken for their protection; yet the moment the line between sanity and insanity is broken down, they show their condition by refusing to acknowledge the reality of it. I have a patient who at indefinite intervals has very painful attacks of recurrent insanity. She is now in one of these attacks, and foreseeing it, I watched her carefully. She became fidgety and irritable, whereas she was ordinarily placid and manageable; she would repeatedly ask me if I thought she was going to be ill again, and if nothing could be done to prevent it. All at once her old delusion appeared—it might have been, as it were, lying by in a repository ready to be produced when wanted; she imagined that she was surrounded by water which rose up to her throat, and the old train of symptoms consequent on the delusion repeated themselves so accurately, that I was able to tell her with tolerable exactness the time when she would recover. This woman I should at one moment have undoubtedly pronounced sane and responsible,

whilst the next moment she was lunatic and unfathomable. One moment she was sane and in terror of the approaching madness; the next moment she was insane, but unable to recognise it, and indignant at the suggestion of it. It might be supposed that in these recurrent insanities, from having the history of previous attacks it would be easier to produce cures; but experience does not confirm this, although it must be certain that the lesion, though leading eventually to serious results, cannot in itself be very profound, otherwise we should not find the histories of complete recovery that occur between the attacks. The determination of the point where insanity begins is important, especially with relation to the question of criminal responsibility. In some instances there is no difficulty about it. I have patients in whom I could fix the moment when they become insane; in others, the determination must be merely conjecture, because the only witness to the circumstance is the one least able to judge of it, viz., the patient.

Nothing is more startling than the suddenness with which, even in patients with whom we are well acquainted, a new delusion or group of delusions will appear. It seems often as if a new form of insanity had become developed in them. With the rise of this new phase a patient will repudiate entirely the state that existed before, because he evidently has no consciousness of the condition in which he was. This changeableness is a good sign, for it leads one to think that there is a greater chance of rest in the cells that were before affected, and all the more hopeful is it if the newly-arisen string of delusions passes on to another variety. This sudden appearance of a decisive symptom is not peculiar to insanity, for in other diseases there is a time of general disturbance, and another when by the rash or other special characters we can say that a definite ailment is present; and just as we may have an abortive febrile attack, so may we have an abortive insanity; the preliminaries were there, but the full development failed. How often does it not happen that the first symptom of an eruptive disorder is the appearance of the rash; and in the same way a violent act may denote the establishment of an insanity of which there were no such antecedents as general constitutional or mental symptoms. Some authorities are of opinion that a period of depression invariably precedes a true maniacal outbreak, and they would limit the latter cases to those invariably preceded by the former; but it is difficult to see the grounds on which such opinions are formed, for they are certainly not borne out by clinical experience. Some cases where, to all external appearance, the mind is most profoundly affected, are those known



as absolute dementia, caused by sudden shock, and yet in such persons the lesion is really only of a temporary and passing nature. Not long ago I received a female patient, who, from mental shock at an attempted rape, became suddenly insane; she was transformed in a moment from an intelligent person into a typical dement. In this state she continued three years, when some acute febrile symptoms appeared together with tubercular pneumonia, and the patient as suddenly regained her intellect as she had lost it. There was no question of hysteria in this case, it was one of acute dementia, not attended with the cataleptic state in the slightest degree, and it was very instructive because the suddenness of the attack was well authenticated.

In the phenomena of hypnotism, chloroform inhalation, mesmerism, the loss of consciousness is sudden, and can be noted as such not only by the observers, but by the reports given afterwards by the subjects, who remember clearly up to a certain point, after which all is blank. So far no explanation has been given of this sudden loss of function except on the vaso-motor theory that the part is suddenly deprived of the exercise of function by loss of blood; but this *modus operandi* is too crude and easy to account for the long continuance of the condition once developed. Surely an arrest or diminution of the supply of blood for so long a time would lead to atrophy or to permanent change of a degraded character, and would be incompatible with the complete and sudden resumption of function that is seen after even very long periods of suspension. The true explanation will be found in the nerve tissue itself. In the excitement of epilepsy or of general paralysis the pulse is hard and very quick. Is any good gained by causing the pulse to slow down? No. The pulse may be reduced by digitalis to a small number of beats per minute, and even rendered intermittent, but there is no alleviation of the mental symptoms; whilst, on the other hand, an epileptic fit, which causes a sudden discharge of nerve force, or a sleep which promotes the nutrition of the cerebral cells, slows the pulse and cures the acute mental symptoms for a time.

To say that the brain-cells are only capable of bearing a certain amount of strain teaches us nothing. We cannot show any chemical change in their composition, nor in their conductive or receptive powers beyond the recognition of the fact that in some states the resistance to the passage of a current is increased or diminished, or that some of the special senses are intensified in their acuteness for receiving impressions. We can only recognise that the vitality of the cell, as regards its highest manifestation, is destroyed, and it seems probable that here we shall have to stop. I have often been struck with the difficulty



of finding anything like a probable cause for the various attacks of insanity that come under notice. In the majority of cases the reports are absolutely unreliable. Cases stated to be due to worry or domestic trouble can, in a great number of instances, be absolutely struck out as being so caused. The terms are used because, in the absence of a direct cause such as blood-poisoning, injury, shock, no other reason can be brought forward. The lazy person and those most free from trouble and worry are just as, if not more, likely to become insane than those whose existence is always a continued struggle. Looking at the intricacy of the mechanism and its complexity, the necessity for correlative action of so many different and highly organised structures, the obscurity of nerve-force and the known way in which even coarse structures become affected apparently without reason, it is surely easy to believe that, without any cause beyond that of a minute alteration of structure, due to defect in itself, the cell may become changed and incapacitated *quoad* its normal vital tension, inevitably leading to loss of function and disturbance of the balance of mind. Families are often startled by the sudden suicidal act of a member, and especially do they ransack their brains to find out any cause, any change in the victim's demeanour, that ought to have led them to anticipate what has happened. Their inquiries are futile, probably because the prompting that led to the act was sudden, was probably a minute before the man committed the act as distant from him as it was from his friends. He was lively and gay, with no care or thought for the morrow, but a sudden tissue change occurred in him, and in a moment he became insane. These unexpected changes greatly upset the dogmas laid down in text-books and confound many experiences, besides leading to great mischief among the survivors of the family. Until it is recognised that insanity is, or may be, as much an accident as is a pleurisy, or pneumonia, or an accession of boils, we shall have people said to be suffering from hereditary taint when there is absolutely no justification for such a statement. I have over and over again traced attacks of insanity to what I would call the mere accident of tissue; there has been no coarse cause, such as injury, &c.; the circumstances were prosperous, the man was comfortable in his family relations, and to the astonishment of his friends and acquaintances he has become insane. Probably the individual after his recovery is equally unable to give any cause for his trouble, because there was no cause, in the ordinary way of using the term. Constitutional vital change was the cause, for which his mode of life and his antecedents were no more responsible than they would have

been if he had developed instead a cancer of the omentum. An attack of insanity having once begun, may be expected to follow in certain lines, and hence we are able to classify cases to a greater or less perfect extent, but as often as not our calculations are upset owing to a new lesion arising just as suddenly as did the first, bringing with it a fresh series of concomitants. The most unsatisfactory cases as regards their causation I find to be general paralytics. All sorts of reasons have been found for this disease at different times—excessive sexualism, alcoholism, over-anxiety, and worry; but though one or some of these may, and doubtless do, account for a large proportion of the cases, I have yet seen others which seemed entirely different in their origin, and to be accounted for solely on the hypothesis of self-constituted change in the vital properties of the brain-cell itself. The more highly elaborate the education of the cell, the greater is the probability of derangement from intrinsic failure, and so we can understand how a disease like general paralysis is rare among savage tribes; but it does exist among them in a low form, just as it may do in an imbecile or idiot; and the fact of an acute attack of insanity being possible in these classes effectually does away with the necessity of always looking for external material or social causes, inasmuch as from the nature of their organisation the subjects are incapable of yielding to their influence.

The difficulty that we often experience in finding a cause for an attack of insanity will not cease until the chemistry of the nervous system is more complete. I have in a former paper (S. B. H. Rep. 1880) described certain morbid changes in the intestinal canal of an ulcerative character which account for the intractable diarrhoea generally met with in the last stages of long-continued brain-disease. Dr. Lauder Brunton's chapter, "Food and Poison," in his book on the "Disorders of Digestion," should be read and studied by all interested in the subject of the causation of nervous disorders. This book was not published when the paper above alluded to was written, but it explains many of the statements therein made, and is, I think, of the utmost importance with regard to the ætiology and pathology of insanity. The formation of ptomaines, or alkaloids formed by the decomposition of proteid substances, and their action on both the higher nervous system and the functions of organic life, go far to explain the ailments of the digestive apparatus, the otherwise inexplicable diarrhoea, and the typhoid-like cases so common among the insane. And if they have this action on the digestive apparatus, it is extremely likely that attacks of acute insanity may be produced by them, because we already have histories of the paralytic action and delirium caused

by choline, neurine, and muscarine. The suddenness of attacks of vertigo, headache, coryza, is quite compatible with the absorption of one of these poisonous ptomaines, for the cure of which, as a rule, a strong purgative is sufficient; if their production is continued, the nervous affection will last too, or in some subjects the condition of nerve affection may be continued for some time after the formation or excretion of the poisons. The form of mental disorder mostly produced by indigestion is epilepsy; but viewing the close relation between epilepsy and some forms of acute insanity, it is easy to understand how indigestion may cause the latter. It must, of course, be remembered that a good deal of the indigestion met with in the insane is due to the derangement of the nervous system, but we can generally distinguish between the two classes of cases. In the set of symptoms known as gastric crises, the nervous affection is probably the chief agent, as shown by the suddenness with which the attack comes on, and the cure after a good sleep. This sudden explosion of nerve force is akin to epilepsy, and I have known in an insane person the sudden development of a suicidal impulse coincident with the accession of a severe gastric crisis; indeed, it is no uncommon thing to see the sudden development of mania, furred tongue and vomiting or diarrhœa. Hysterical insanity is very sudden in its development, and in its explosiveness is very similar to epilepsy; but it differs from other forms of insanity in the frequency with which the subjects will often recognise the extraordinary acts they perform, whilst at the same time declaring their inability to restrain the sudden impulses that arise in them. From no other class of patients do we obtain such positive information as from this of the suddenness with which delusions and impulses arise, because the condition seems to be attended with very little organic change, and is always attended with consciousness, probably even when it assumes the form of hystero-epilepsy. When a man of ordinary sane temperament is excited, either by pleasure or anger, the condition is temporary, and leads to no further result; but in persons of insane neurosis or the subjects of recurrent insanity, the equilibrium of the nervous system is so easily upset, that one often sees an attack of mania brought on suddenly under these conditions, and these cases are interesting as showing the suddenness with which the attack comes on. I have often noticed the cases of women who have been kept in the asylum free from disturbing causes until it was thought that all chance of irritability from ordinary causes had passed away, suddenly, on going home, develop a recurrence of the attack without any of the premonitory signs that were supposed to have ushered in the



first attack ; and I have now a female patient here who has been sent out on trial several times, but who invariably develops a sudden attack of mania soon after her arrival at home, though whilst here she is quite free from any demonstration of excitement, and is, indeed, rather of the opposite disposition. It is not likely that there is in this patient a state set up merely by vaso-motor change, nor is there an organic change in the sense of an inflammatory lesion, because there is not time for it, but some condition vital to the integrity of the nerve-cells occurs, which, with the removal of the conditions, speedily subsides.

As is the actual commencement of insanity sudden, so also is its cure. As there is a distinct line drawn between the time when a person is sane and becomes insane, so is the return to sanity equally sudden. In some cases great duration of illness seems to have had little effect. I have known a woman who was insane for fifteen years suddenly regain her sanity. Of course the mind of a person who has lived for so long a time under such peculiar conditions must be carefully judged, because during this period the ordinary means of acquiring information and of forming judgments have been absent or perverted in their application ; but taking mind as we now find it, in such a case as this, there is a recovery, *i.e.*, loss of delusions and all the signs that constituted the insanity. I have known patients go to bed in a state of acute maniacal excitement and awake in the morning quite well, as if the delirium and incoherence were the results of brain-fatigue, the recuperative power asserting itself during the rest. The woman to whom I referred as having the delusion of being surrounded by water has on two occasions shown a sudden recovery. On the first occasion, after she had been in great mental distress for some time, had refused food and was much emaciated, she one afternoon sat down (a thing she had not done for weeks) and asked the nurse for some tea. "Why, now," said the nurse, "you are quite well!" "Yes," said the patient, "I feel quite right now, but very weak." And so she was. In a moment the change had occurred, and for a long time she showed no signs of relapse. However, about three months ago she suddenly gave utterance to the old delusion that she was surrounded by water, and her symptoms ran a very severe course, so much so that I thought she would have died. She became very disgusting in her behaviour, indecent in her habits, careless and untidy about her personal appearance, and most piteous in her facial contortions and in her expression of the torture she was suffering and would have to go through. One afternoon I left her in this acute state, in all the misery of



her dishevelled and dejected condition, and the next morning she was well ; her dress was tidy, her appearance natural. There was nothing except previous experience of her illnesses to lead one to suppose that so sudden a change would occur, but acting on what had been seen before, we ventured on the prognosis that her recovery would be sudden, and the result justified it. When asked about her feeling while in the acute state, she can give no account of it. The after-effects of the severe trial through which the patient has gone remain some time, but the symptoms of this state of weakness are easily distinguished, and should not be confounded with the condition just passed through. To many who watch the period of cure in acute insanity it will seem that the subsidence in the symptoms is gradual, not sudden. No doubt in many, if not in most instances, there is a gradual decline in the gravity of the more acute symptoms ; the incoherence and restlessness are less marked, but the actual point of complete disappearance of the mental symptoms that constitute the insanity is sudden.

The sudden disappearance of delusions and the sudden change to others in persons who have been long insane, or in recent cases, is seen every day ; and very fortunate for those who have to treat these persons it is, for however troublesome, violent, and destructive a person may be, there is always the hope that a sudden change may supervene. On the other hand, it frequently happens that we are disappointed in our estimate, and that a patient who otherwise seems going on well and likely to lose the insane state develops sudden symptoms of a dangerous character, and commits an act of a desperate nature for which we may have been unprovided. Hence the difficulty of answering such questions as, "Is the patient likely to hurt himself or to be dangerous to others?" No one can tell. Every lunatic must be viewed as a possible suicide or homicide ; and where violent acts are committed, they are found, as a rule, to be done by the persons least suspected. If a patient has never manifested the suicidal or destructive propensity, I have no confidence that such an impulse may not arise as long as the insane state lasts ; but if a patient who during the insane state has shown strong suicidal determination, suddenly loses both her delusions and impulses, I have then every confidence that the destructive tendency has departed also. A short time ago, at the urgent request of the friends, I discharged on trial a patient who was suspected to be suicidal, but had never made any distinct attempt whilst here. She herself strongly denied the impulse, and I believe that she was in earnest when she so spoke, but she was evidently insane, and accordingly the friends were especially

cautioned not to lose sight of her. For a few days the woman went on very well, and though she had plenty of opportunities for destroying herself, nothing seemed farther from her intention; but one morning when at the railway station she threw herself under a train and was killed, though immediately before she had expressed herself as feeling well and happy. I do not doubt that in this patient the suicidal impulse was sudden, and that it came on with the sight of the train. All the histories of attempted suicide by hanging or strangulation show that if the patient's insanity is not cured there is great danger in the attempt being repeated, but that if the attempt has been made by a cutting process, there is not the same danger. The reason of this I think is that after a severe cut the hæmorrhage often cures the insanity, and so the impulse is cured at the same time. I have known people who have bled profusely from throat wounds, or cuts in the abdomen, or after self-mutilation, profess the greatest horror for what they have done, and express their astonishment that they ever could so have acted; but then they were well, and the self-inflicted operation had cured them. Hanging or strangulation, however, relieves nothing; it probably tends to aggravate an already existing morbid state; and so the insanity not being cured, and the impulse still remaining, an attempt is again made on the first opportunity. This instability renders the giving an opinion to the friends of the patient very precarious. What they want to have is generally an assurance that the patient is or is not dangerous to himself or others, and this is just what it is impossible to predict with certainty. A few days ago I saw a patient who had an hour or two before attempted to strangle herself by tying tape round her neck. She promised faithfully that she would never attempt such a thing again, but the next night she repeated the act, and was nearly successful in the attempt.

The development of visceral disease at times coincides with the sudden clearing away of profound mental disturbance; at times, however, it has no such influence, and I confess myself unable to distinguish between the two classes of cases. For instance, there was a woman here, of most abusive language and very deluded, filthy in her conversation, and at times violent; without any apparent reason she became dropsical, developed renal disease, and suddenly became sane after having been very deluded for years. Another patient, who had not spoken for three years, died from rapid phthisis, and suddenly became sane at the time when the acute lung symptoms made their appearance. On the other hand, a female patient died here from cancer of the breast, and she remained insane with delusions

of persecution to the last, although after death there was no appearance of disease of the brain.

There is a general opinion that a sudden cure of an attack of acute insanity is not good for the patient. I see no reason for this opinion, which arises probably from the confusion of one class of cases with another. There is undoubtedly a form of insanity where the symptoms are remittent or intermittent; they rise and fall suddenly at definite or indefinite periods, and it is difficult or impossible to foretell how long they will continue to exhibit this oscillation. Some time ago a woman was admitted in a very acute state of mania, and I anticipated that she would have an attack of three or four months' duration and then would recover; but after being ill for less than a week she suddenly became sane, and for three or four weeks remained so. She was very anxious to leave, but being uncertain about the recurrence of her attack, I detained her, and during the last two years she has exhibited a recurrence of attacks with perfectly sane intervals, these, however, not being of sufficient length to justify her discharge. There is no difference in kind between one attack and another, but I cannot say that the present one will not be the last one, nor that it will. I am inclined to think that in the majority of cases the sudden cessation of symptoms in an acute attack will be followed by other attacks in a short period, but at times I have been deceived, for people have recovered suddenly after a few days' illness and have remained well. We have here a class of cases strongly resembling epilepsy; the sudden onset of the maniacal symptoms, the delirium unattended with real consciousness, the muscular violence, and the sudden cessation of all the symptoms with return to consciousness, then a period of rest and absolute freedom from any sign of mental affection, followed by a repetition of the symptoms similar to the other in all their essentials after a longer or shorter interval. In some cases, as in epilepsy, the attacks and intermissions go on for years, ending eventually in both classes in a permanent dementia, or else sometimes astonishing us by not reappearing at the usual time and ceasing altogether.

Just as it is impossible to say that a patient who has had one fit will or will not have another, so is it at present out of our limits to define the length of an attack of mania or the probability of the permanence of its cure. The accident of acute bodily complication often cures an epilepsy, and we have already seen how suddenly the symptoms of acute delusional insanity disappear in the same manner. There are forms of insanity where the objective signs last through years and unto death, whilst apparently the same symptoms are pre-



sent in cases where long intermissions occur, and the greatest difficulty is found in distinguishing between these groups. Muscular affections of the nervous system do not appear to be so sudden in their departure and accession as the mental ones.

The gradual on-coming of paralytic affections of speech is noticed from the first pause in fluency to the stumbling of articulation; but even this is recoverable from, and though the lesion that produces difficulty in articulation is generally thought more profound and incurable than the one that merely shows itself in delusional insanity, there is really no reason why this should be so. Indeed, the fact of the dependence of the two sets of symptoms on the same fundamental lesion is proved by the occurrence of cases where the two are combined and disappear together in the attacks and remissions. I have now under treatment a woman who was admitted in a state of acute mania, probably of alcoholic nature, from which excitement she in a few weeks recovered. At this time her speech was perfect, but she has had several repetitions of the maniacal attacks, and in these her speech is now decidedly of the slippery and hesitating form that is usually associated with general paralysis. Since, however, in the intervals this patient is sane both as to her delusions and mechanical utterance, I believe it possible that she may recover. Several times, too, in men I have been deceived as to the significance of motor tremor in association with mental disturbance, having given an adverse opinion which has been upset by the recovery of the patient; so that I now lay a good deal of stress on the continuance of the motor symptoms when the mental ones are absent or much repressed, and also on the gradual increase in the motor tremor and its constant pressure. In true epilepsy one sees sudden motor excitement accompanied with sudden mental fury, or at times a sudden production of unconsciousness with rapid but uncoordinated muscular movements; and so in mania we have the concurrence of the groups of symptoms, modified by their less violent and changed character in the latter form. Rapidity of utterance and incoherence have nothing to do with this affection of speech. In puerperal mania we often see the greatest incoherence and volubility associated with perfect utterance, whilst the same individual would in health probably have shown muscular tremor under a far less state of excitement; but in this state consciousness is always present, and the person in trying to choose words hesitates and slips some of them; in the former, the patient has no knowledge of what he is saying, and the machinery representing word-grouping and expression, not participating in the lesion that causes the delusions and incoherence, acts perfectly.



After all, does not an examination of the physiological processes in health lead us to the same conclusions? Muscular fatigue appears to set in suddenly, and any one may note how a person will walk for miles without apparently feeling any fatigue, when suddenly the sensation of weariness supervenes, and is not recovered from until after a rest. Just the same is it with mental operations. Up to a certain point all is well and no fatigue is experienced; but the feeling of tiredness suddenly comes on, and further coherent work is impossible until the tissues are recuperated. The important point to bear in mind is, that the suddenness of the development of the insane state may or may not be preceded by general constitutional signs, and that the recognition of the fact of the sudden on-coming of possibly a violent condition may prove useful in those unfortunate cases where a suicidal or homicidal act is the first sign of an attack of insanity, cases in which the plea of insanity when set up is rather difficult to maintain, because there is a tendency to regard the development of insanity as a gradual process in all instances.

# CASES OF SPONTANEOUS PNEUMOTHORAX.

BY

VINCENT D. HARRIS, M.D.

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The subject of pneumothorax has been so recently discussed by Dr. Samuel West in the Bradshaw Lecture of this year, delivered before the Royal College of Physicians, and the statistics of pneumothorax in relation to phthisis have been so carefully collected and brought up to date by the same observer, that little remains to be said as regards the pathology and physics of the condition. The object of recording the following cases, therefore, is rather to illustrate from a clinical point of view one or two of the modes of origin and results of this exceedingly interesting affection.

Four of the following cases have occurred in the Victoria Park Hospital for Diseases of the Chest under my care within the last two years, and are therefore not included in the statistics above referred to (*Lancet*, May 3, 1884, p. 791), which were based upon the records of the same Hospital from 1856–83 inclusive. Of the five cases, three (men) recovered and two (women) died.

CASE I.—Thomas S., æt. 32, a railway-carriage cleaner on the North London Railway, came to the out-patient department of the Victoria Park Hospital at the beginning of November 1885 suffering from cough. He stated that his work exposed him to all conditions of weather, and that, although he had been troubled with a winter cough for some years, he had never been obliged to lie up with it.

During the winter of 1884–85 the cough had been worse, but in the summer he had been in good health. Had not spat blood and had not suffered from night-sweats. Four years ago he had had rheumatic fever, and had been in bed for six weeks; since then had been rather short of breath on exertion. About five weeks before he applied for relief at the Hospital, he had

been taken with what he called "a fresh cold," with pain in the left side and lower part of the chest, together with slight cough, shortness of breath, and impaired appetite.

On examination of the patient's chest, it was found that there was a considerable pleural effusion on the left side, with displacement of the heart to the right, and dulness high up in the chest. The patient was examined by several who were attending the out-patient clinique at the time. As it was inconvenient for him to stay in the Hospital then, he was allowed to go home on the understanding that he was to return in a day or two to be admitted as an in-patient.

He did not, however, return as soon as he promised, and was not admitted until a week after. He then gave this account of himself. On his way home from the Hospital, on the occasion of his visit to the out-patient room (after somewhat prolonged examination, which must have fatigued him considerably), he was suddenly taken with a severe fit of coughing, with a feeling of faintness and collapse, and brought up at once after his cough *several pints of clear fluid*, which tasted hot and salty; it was, as he said, as though "a water-pipe had burst." Had evidently felt worse since this had happened, and so, it may be supposed, had postponed his return to the Hospital.

On *examination*, soon after admission, he was found to be lying on his back and breathing quickly but quietly ( $R. = 28$ ), without pain. His pulse was 112, and temperature  $100^{\circ}$ . His chief trouble was cough, with which there was much frothy expectoration. The physical signs in the chest, however, showed that he had a hydro-pneumothorax of the left side. They may be summarised as follows:—*On the left side*, impaired movement, and vocal fremitus over the whole of the side, back, and front; absence of apex-beat in its normal position; hyper-resonance, especially over the side of the chest and behind as far as the middle of the scapula, then shading off into dulness, which was complete from the eighth rib downwards; distant amphoric breathing; *succussion*, *bell-sound*, and occasional *metallic tinkling*. *On the right side* there was evidence of the pushing over of the heart and some bronchitis, and also, according to the account of the clinical assistant in charge of the case, Dr. P. M. Earle, some little pleural effusion. (I myself think that the dulness observed was liver-dulness.)

Thus the physical signs on the left side were those of marked pneumothorax with slight effusion, and contrasted with those observed two days before of pleural effusion.

It is unnecessary to give a detailed account of the progress of the case. The physical signs gradually diminished, and on

December 3 the note indicates that the heart was returning to the normal position; the chest was still dull behind and at the lower part, and hyper-resonant above and in front. The bell-sound was still to be made out over a more limited area, but the succussion sound could be no longer demonstrated. The sputum with the cough was frothy, thin, and blood-stained occasionally. His general condition was good. His temperature was scarcely ever above normal. The improvement continued until January 7, 1886, when he was attacked with rheumatic fever of considerable severity, but this yielded to salicylate of soda, and on February 4 he was sufficiently well to leave the Hospital.

During the whole time of his stay in the Hospital, although he was frequently examined, we could obtain no evidence of phthisis, neither had he the symptoms of that condition. Bronchitis continued more or less whilst he remained in the ward, but in spite of a persistently bad appetite and insufficient sleep at night, his general condition, except during the attack of rheumatic fever, was good, and he gained some pounds in weight.

On discharge from the Hospital, the signs remaining at the base were impaired movement, dulness, and loud, almost amphoric breathing; no bell-sound nor succussion.

In the following May he was again admitted, having in the meantime developed aortic disease of a very marked character. He stated that he had not been able to work since his discharge from the Hospital, but that he felt stronger and better than he did then. His cough had continued troublesome, and sputum profuse, frothy, and muco-purulent. Breath not very short. No pain in chest; no rheumatism; good appetite; no indigestion, but vomits with cough sometimes; no sweating.

On physical examination:—Dulness at left base behind, and bronchial or amphoric breathing, but no added sounds. There are loud diastolic and systolic murmurs heard at the right base of the heart, but the heart still appears to be somewhat to the right of its natural position. He remained in the ward until the end of June, and then left the Hospital stronger and better in all ways, but the physical signs continued, and the cough was still troublesome, and the sputum copious and frothy. Temperature normal.

Within the last two or three months the patient has again been an out-patient, but he is apparently fairly well, and able to do his work. His heart is now his chief trouble. He had been able to get on without hospital treatment for more than a year.

In commenting upon the foregoing case, which was from the beginning most interesting to those who watched it day by day and week by week, it is necessary at once to say that one cannot



eliminate phthisis<sup>1</sup> as its possible cause. At the same time it will have been evident that, if phthisis existed, it was either very chronic or unusually latent.

The case may be shortly stated thus :—A strong man, with no family tendency to consumption or personal history of syphilis, exposed to all kinds of weather, suffers every winter from cough (he seemed to me to be badly off and imperfectly clad). The cough usually leaves him during the summer, as it did in the summer preceding his attack, but that earlier in the winter of 1885 than usual he suffers from bronchitis, and is taken with an acute attack of pleurisy with effusion. On coming to the Hospital, his condition is recognised, but he is subjected to a somewhat prolonged examination. On walking home from the Hospital he is taken with violent coughing, and, by some means or other, a great part of the considerable pleural effusion is discharged through the lung, and so, instead of pleuritis simply, hydro-pneumothorax results.

It is no doubt unlikely that a healthy lung will rupture, but at the same time it must be remembered that the uncompressed portion must be subjected to a very great strain in violent expiratory efforts, such as a fit of coughing, when the lower part of the chest is filled with fluid, and particularly when the patient is in a standing position.

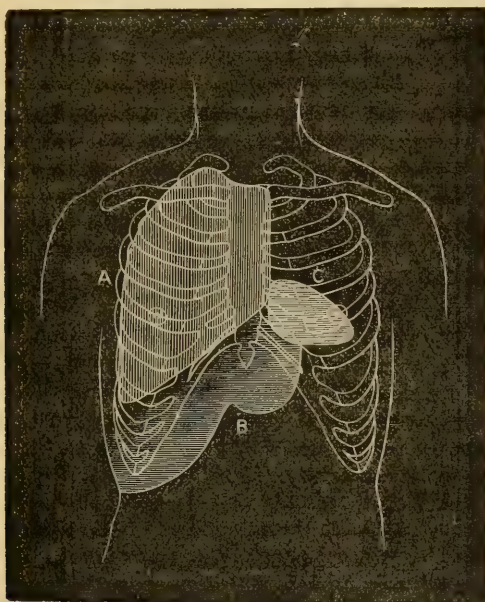
Again, it is unusual for a serous pleural effusion, as this doubtless was, to be discharged through the lung. It is no doubt far commoner for an empyema to make its way out in this direction. But the conditions are different; in the latter case there is erosion or ulceration of the lung substance by the pus. In this case there was, if we read the symptoms aright, a distinct rupture of the pulmonary tissue.

After the discharge of the fluid through the lung there was collapse. The opening gradually healed up, and the air and fluid were more gradually absorbed, and the patient remains with a thickened pleura. This result of pleural effusion is, according to my experience, almost invariably left for a very long time. I believe a thickening of the pleura arising in this manner is frequently diagnosed as basic phthisis, from which it is distinguished with difficulty. Phthisis too frequently follows an attack of pleurisy. By examination it is found in such a case that the physical signs at the base are more marked than at the apex, and so the erroneous conclusion is drawn that the phthisis had begun at the base.

<sup>1</sup> As regards the possible origin of the pneumothorax in early phthisis, Dr. D. Powell says, "A small subpleural tubercle may soften and break through the pleura, but such an occurrence is much more common in the more advanced stages."

CASE II.—Fanny P., æt. 24, married, was admitted into Hospital on January 4, 1886, complaining of pain in the chest and severe cough. She dated her illness from an attack of malarial fever in America two and a half years before admission, since when she had suffered from cough, and had been getting rapidly worse since her return to England in the July of the past year. Night-sweating, loss of flesh, difficulty in breathing, cough with blood-stained sputum, had been prominent symptoms.

*Condition on admission.*—Thin, dark-haired, very anæmic and emaciated; complained especially of cough, with greenish



*Diagram of the Physical Signs of the Chest of Fanny P. (Pneumothorax of the Right Side).*

*A.* The shading with longitudinal lines indicates the area of hyper-resonance, extending beyond the left border of the sternum. *B.* The shading indicating the displacement of the liver downwards. *C.* The transverse shading indicating the position of the cardiac dullness.

expectoration and a constant pain in chest. The physical signs showed almost entire consolidation of the right lung with a vomica at the apex. The left side appeared free from disease.

The general condition of the patient was very serious and the temperature high, about  $101^{\circ}$  or  $102^{\circ}$ . Was kept in bed.

On January 8th was suddenly seized with a violent pain in the right side whilst out of bed for a few minutes, and almost

fainted. Was put to bed, and poultices were applied, but without much relief to pain. Temperature raised on the 9th to  $104^{\circ}$ . On physical examination of the chest, a very extensive pneumothorax was found on the right side, with hyper-resonance front and back, extending to the left edge of sternum in front; displacement of the heart, apex-beat being an inch and a half outside of nipple; depression of the liver, so that it could be made out nearly to the umbilicus; distant amphoric breathing; metallic tinkling and bell-sound.

From the development of the pneumothorax on the 8th until the day of her death on the 22d of January, the patient continued in much the same state. There was no apparent diminution in the amount of air in the pleura, no attempt at its absorption taking place.

She had high fever, the temperature rising as high as  $104^{\circ}$ ; pulse rapid; was restless, could not bear the least movement; cough troublesome, appetite poor, little sleep, and a gradual decline in strength. The actual cause of death seemed to be congestion of the lung on the left side, but the end was much more sudden than was expected.

This case was not by any means out of the common, but it is interesting when viewed side by side with the one which has been previously recounted. The origin was evidently the rupture of a phthisical lung, probably in the neighbourhood of the apical cavity. This was most likely due to straining at stool or the unusual exertion of getting out of bed. If the former, the effort was violently expiratory. The points which are noteworthy in the case are:—

1. *The extent of hyper-resonance* and the more than usual displacement of the heart and liver, coupled with the fact that before the development of the pneumothorax there was dulness nearly if not quite throughout the right side.

2. *The extreme collapse and high fever* which attended the entrance of air into the pleura. This is somewhat difficult to account for. When a lung is practically disorganised by consolidation or riddled with cavities, it is, one would imagine, of little use for the aeration of the blood, and air in the pleura under such circumstances ought not to increase the rapidity of respiration very much, nor to cause so great an aggravation of the patient's distress. Acute pleurisy, too, seldom shows so high fever as  $104^{\circ}$ .

3. *The absence of all attempt at absorption of the air in the pleural cavity.* This occurs when the opening into the pleura is large, and the passage of air into its cavity is free. Such a free communication is especially likely to occur when one wall of the



cavity is adherent to the chest-wall. Cases of pneumothorax in which hyper-resonance is so extensive and abiding are not seldom those in which a valvular opening into the pleura exists. As this was probably the condition here, I regret much that the pleura was not relieved by puncture from the outside with a fine trochar. This might have removed the urgent distress.

CASE III.—Emma A., æt. 22, a barmaid, was admitted into the Victoria Park Consumption Hospital on August 12, 1885, as an urgent case, suffering from extreme dyspnœa and prostration. On physical examination, it was found that there were signs, to be presently mentioned, of pneumothorax on the left side.

The history of her illness told us that she had been very gradually attacked with cough, at first dry and hacking, which increased in severity, and which first disturbed her about eight months before admission, shortness of breath, and weakness. After a time the cough was accompanied by frothy and tenacious expectoration. Never suffered from hæmoptysis, but had had a pain in the chest, more or less severe, throughout the whole course of the illness, with dyspeptic symptoms and loss of appetite and wasting, but never night-sweats of any consequence.

Her present condition of extreme dyspnœa and pain dated from a sudden sharp attack a fortnight before admission, which was accompanied by prostration and much collapse.

*On admission*, examination showed that she was pale and emaciated (weighing 6 stones 10 lbs.), with marked cachectic aspect, breathing with difficulty. Facial muscles tremulous, gums not spongy, conjunctivæ bloodless, fingers not clubbed. Tongue dry and coated; appetite as a rule fair; bowels confined. Temp. 100.9°. Pulse 132, soft and compressible. Resp. 36, forcible. Amenorrhœa for two months. Slight œdema of feet. Intelligence and memory impaired.

No family history of phthisis.

The physical signs discovered on examination of the chest were as follows:—On the left side in front, impaired movement, absence of apex-beat, diminished vocal fremitus; hyper-resonance and absence of cardiac dulness, loud amphoric breathing, and well-marked “bell-sound.” On the right, there was evidence of the dislocation of the heart; behind on the left, there were similar signs to those observed in front, but dulness was made out below the fifth rib; the bell-sound above the dull area was very distinct; no abnormal signs on the right side behind; no moist sounds. Succussion sound not tried, as patient could not stand much examination.



The patient's condition improved during the fortnight after admission. The dyspnœa and cough diminished; sleep fair, and appetite also not bad; strength increased; but the pallor and cachexia and the physical signs of pneumothorax on the left side continued. After this, however, there was a gradual failure; cough and sputum increased and strength diminished. On September 1 the feet and hands became puffy and œdematous, and on the 6th of September she died, no new symptom having developed, but the physical signs remaining unaltered. The temperature throughout the period of her time in Hospital was distinctly varied, varying from about 99° to 101°.

*On post-mortem examination*, there was found left pneumothorax. The heart lay under the sternum, and extended to the right beyond the right border. The left lung was collapsed, and there was a ragged cavity of considerable size which occupied the greater part of upper lobe, and communicated directly by means of a round opening large enough to admit one finger within the pleural cavity. The pleura contained air and about oz of offensive purulent fluid. In the right lung were many tubercles.

The liver and kidneys were fatty.

CASE IV.—Wm. S., æt. 18, was admitted into Hospital on March 3. He stated that he had been quite well up to two months before admission, and that he had been at work up to the 18th of February. He was first of all affected with a small painful lump in the left groin, which has become increasingly painful. On February 29, whilst walking, was suddenly seized with pain in the epigastrium, which extended up the whole of the left side to the left shoulder and arm. He placed his hand over the epigastrium to relieve the pain by pressure, when it became powerless, and he became aphasic. He did not lose consciousness, and was able to get home (not a long way off) by himself, and was carried in and put to bed. The attack lasted half an hour, but the pain in the side continued. On the 1st of March the pain was worse, and a poultice was applied to the side, and on the 3rd he was admitted into Hospital.

*Condition on admission.*—Fairly nourished, light complexion. Lies upon his right side with legs drawn up, because of pain in the epigastrium and left side of chest. Tongue dry, furred at the base and part of the left side, the rest red, and papillæ very prominent. Tonsils swollen (especially left). Pulse 104. Temp. 101.8°. No paralysis.

Thorax: left apex looks more prominent than the right. No painful spot in chest. Left side moves less than right. Vocal

vibrations nearly absent on the left side. Cardiac impulse and heart's apex-beat not to be seen or felt on left side. On right side pulsation is felt between third and sixth ribs to right of sternum and in vertical nipple-line; the pulsation is most marked on the fifth space. Some little tenderness on percussion over left lung. The cardiac dulness has disappeared entirely from the left side, but an area of dulness corresponding is to be made out on the right. The whole of the left lung, front and back, with the exception of a small area at the apex and at the extreme base, is hyper-resonant, with faint and distant breathing in front and an amphoric sound behind; bell-sound very marked. The breathing at the right base behind is harsh, and there is some rhonchus superadded.

*Abdomen.*—Absence of movement on the upper part of the left side. Tenderness over epigastrium and left hypochondrium, and at a spot above and a little behind the anterior superior spine of ilium on the right side. The sense of resistance on the right hypochondrium is increased down to a level with the umbilicus, and also below the ribs for an inch on the left side. Dulness over right hypochondrium (displaced liver?).

A swollen, raised, rather tender lump on the left groin. Denies venereal disease of any kind.

A slight cough; spits up a little frothy dark mucus.

No appetite. Bowels generally regular; not open since 28th ultimo.

Urine 1030, containing urates but no albumen. Little sleep lately. Nothing abnormal observed as regards the heart except its displacement.

No dyspnœa.

Father epileptic; mother rheumatic.

4th.—Pulse 130. Temp. 103.3°. Skin hot and dry, tongue furred. Less breathing heard on the left side in front. Resonance on left side more boxy.

6th.—Pulse 94. Temp. 101.3°. General condition and physical signs about the same.

8th.—Temp. 101.6°. P.M. Temp. 103°.

9th.—Cough troublesome; sputum scanty and frothy. Tongue red, raw, and dry. Appetite good.

10th.—Temp. 100.2°. Pulse 101. Bubo discharging.

11th.—Temp. 99°.

From the time of admission until the end of the month the general condition of the patient underwent gradual improvement, and on discharge from the Hospital might be considered, as far as his chest was concerned, quite convalescent.

I had the opportunity of seeing this patient some months

afterwards, and he was then, as he had been in the interval, strong and hale. He was stout and had an excellent colour.

This patient was under the care of Dr. Andrew in St. Bartholomew's, and thus came under my observation. The cause of the pneumothorax was most obscure. The possibility of phthisis was negated by the previous healthy history, the absence of physical signs, and the complete recovery and subsequent good health.

Emphysema was suggested, the rupture of over-stretched alveoli of the lung; but there was no history of straining, nor of occupation tending to that condition.

Subacute pyæmia was also a possibility, particularly if we were not allowed to doubt the patient's denial of lues venerea. The first symptoms had to do with the enlargement of the glands in the groin, which afterwards suppurated. There was also sore throat and high fever. But at the same time it is difficult to understand how, if there was sufficient pyæmia to produce an abscess however small of the lung, it should not have gone on farther.

The attack of an epileptic character, with which he was first seized, might have been due to an embolism. At the same time there were many symptoms which might well have suggested some syphilitic affection of the lung, namely, the epileptic attack with aphasia and loss of power in one arm, the bubo, the sore throat, the complete recovery.

CASE. V.—John C. S., æt. 30, a porter, was admitted into Hospital on July 15, 1887, with the following history. During the winter of 1886–87 had had a winter cough, and was laid up in March with an attack of bronchitis and pain in the right side, for which he had applied mustard-poultices. On June 16th, whilst at work, felt faint, and has been short of breath ever since. During his illness has lost some flesh, has sweated a good deal, and his sputum has been on one occasion blood-stained. The patient stated that he had what is called "colonial fever" nine years ago; that his parents were alive and well, but that he had lost one brother and one sister by consumption.

*Condition on admission.*—Thin but wiry, dark-complexioned, anæmic.

*Chest.*—The right side distinctly enlarged, with some bulging of the spaces on the right side; movements on both sides much the same. Apex-beat in the seventh space, in the anterior axillary line on the left side. Vocal fremitus diminished on the right side. Heart's dulness pushed to the left. Liver dulness at seventh right rib in nipple-line. Percussion resonance increased



over the whole of the right side in front, and extending to the left edge of the sternum; dulness below the eighth rib behind, or possibly rather higher. Breathing has short fremitus on the left side, both back and front, elsewhere almost suppressed. Vocal resonance metallic about spine of right scapula; succussion splash and metallic tinkling well marked over right side; bell-sound not good. No moist sounds heard anywhere. Heart sounds natural. Liver dulness displaced downwards. Spleen not felt. Temp. 99°. Urine natural. No œdema of extremities. Sputum thin, frothy muco-pus.

The diagnosis of hydro- or pyo-pneumothorax was made, but the cause appeared somewhat obscure, for on most diligent search no definite physical signs of phthisis could be obtained. The history was rather that of bronchitis with an attack of pleurisy.

It was a matter of considerable interest to find that on examination of the sputum, tubercle bacilli in distinct amount were to be observed.

The patient remained in the Hospital until October 6th; in the meantime nearly all the signs of pneumothorax had disappeared. The fluid in the chest had increased at first and then diminished; but during the whole time of his stay in the Hospital he was never very short-breathed. His cough was troublesome, but not excessive; his sputum was chiefly mucus, with a little muco-pus now and then. His temperature and pulse were normal and his general condition good. His weight increased no less than six pounds in the three months; but on two several occasions (July 20 and August 13) bacilli were seen on examination of the sputum. At the latter part of the time, sweating increased, but was never excessive.

Some indefinite clicks were heard behind at the left apex several times; but the physical signs of phthisis were throughout very indefinite, particularly for some time after admission to the Hospital. It should be added that the patient was up and about nearly the whole of the time, and was also allowed to walk in the grounds of the Hospital on fine days.

This case was interesting as demonstrating, for one thing, the use of the examination of the sputum for bacilli in cases of suspected phthisis. The physical examination of the chest did not indicate with any certainty that the pneumothorax had arisen from the rupture of a phthisical cavity, and the symptoms might or might not have been considered to indicate consumption. The existence of bacilli in considerable numbers in the sputum rendered the diagnosis of some caseating material in the



lung almost, if not absolutely, certain when taken in conjunction with the symptoms and physical signs.

As contrasted with Case II., the absence of distress and constitutional symptoms whilst a considerable pneumothorax existed is interesting, and also the patient's steady improvement.

The physical signs in the chest on his discharge from Hospital appeared to be those of a thickened pleura at the right base. Of course it is highly probable that beneath this there was lung consolidation.

In conclusion, I may remark that in my experience the "bell-sound" is seldom absent in cases of pneumothorax *at first*, and that it is then generally heard over wide areas. Later on, the sound becomes more localised in extent, and can be only heard on very careful and minute percussion with the coins over the whole of the chest. Not unfrequently, however, the bell-sound may be replaced, as the case progresses, by a somewhat less clear sound, which is almost exactly like that made by a hammer striking upon an anvil. I do not know whether this sound has previously received such a name, but I always call it the "anvil" sound.

# SOME ANTISEPTIC MEASURES IN MIDWIFERY.

BY

W. S. A. GRIFFITH, M.B.

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It is hardly necessary to state that the object of antiseptic measures in midwifery is principally for the prevention of, and, to a more limited extent, for the treatment of, puerperal fever.

The term "antiseptic measures" has been chosen as indicating the wide and varied scope of the means necessary to the prevention of septic infection, as well as to contradict the idea that the principles of antiseptic treatment depend on some peculiar method of using some antiseptic agent, such as carbolic acid, or that the application of antiseptics to midwifery is merely a wave of the prevailing fashion passing somewhat late over obstetricians, and doomed soon to disappear, as some of the details of antiseptic practice have already done.

I have thought it advisable to discuss this subject, because I believe we are now able to say what are the essential points in the matter, and to deduce from them certain principles of practice which cannot be disregarded with impunity. They consist of certain means to prevent infection from being conveyed to a parturient woman. The theory held by some authorities, that a woman may infect herself by an autogenetic process, being considered untenable, any such process being regarded only as increasing the liability of the patient to the reception of sepsis, and decreasing her power of resistance to its development.

We open this subject, then, with the following proposition:—  
If a parturient woman suffers from puerperal fever, the disease has been communicated to her from without.

What is puerperal fever? No one, I suppose, now believes that it is a single specific disease. The pendulum has swung

very far in the opposite direction, and we are left by the most recent writers wandering in a large group of different diseases, all of which give rise to pyrexia during the puerperium, and are, therefore, included by these writers under the vague term puerperal fever or fevers. It would, I think, be better to give up the term altogether than to use it in this way.

Puerperal fever has always been looked upon as a very fatal and contagious disease; and if we select from the group of puerperal diseases those which are generally fatal from those which generally are not fatal, restricting the term puerperal fever for the former, we shall have at once a useful and practical classification and definition. We define puerperal fever, then, as puerperal septicæmia and pyæmia, and we exclude puerperal sapræmia, perimetritis and parametritis, thrombosis and phlegmasia dolens, not because these are not also septic as well as traumatic in origin, and therefore to a large extent preventable by the same measures as the others, but because in one case our prognosis is of the gravest, whilst in the other group we expect recovery.

It is proved by experience that all forms of puerperal pyrexia, except those depending on conditions of the bowels and breasts or on mental excitement, are diminished by proper antiseptic measures, so that we may safely omit the detailed discussion of those which are of less importance, feeling sure that whatever we can do in preventing the greater, will prove of at least equal importance in the prevention of the lesser.

By septicæmia we mean a very dangerous and usually a rapidly fatal disease, due to the introduction of living organisms, which have the power of multiplying with enormous rapidity, and in some way bring about the fatal result.

Puerperal septicæmia is this disease occurring in a puerperal woman, and its main characters are, in many cases, those of acute general peritonitis, which commonly forms the most obvious evidence of the disease, the extent of this and other lesions depending largely on the duration of the disease, partly, perhaps, on the seat and manner of the infection, as well as on the resisting power of the individual. It generally proves fatal in a few days, not rarely in two or three.

Perhaps the main obvious difference between this and pyæmia lies in the fact that some cases are characterised by the rapid development of abscesses in the cellular tissue and joints, in addition to or apart from the other lesions. It is certain that in many cases no hard and fast line can be drawn between septicæmia and pyæmia, and that in some cases these particular lesions appear to occur in the more protracted cases, some

of whom may survive for months, some may even ultimately recover.

The disease termed *sapræmia* is one of very great importance and of rather frequent occurrence, not only in connection with parturition and abortion, but in connection with operations and injuries to other parts than the uterus and vagina.

By *sapræmia* is meant a form of blood-poisoning causing very serious symptoms, though not generally fatal if recognised and properly treated, due to the continued introduction of putrid material, the products of putrid decomposition, which, however, unlike the infective material of *septicæmia*, produces effects only in proportion to the amount introduced, this being due to its want of power of reproduction and growth within the blood and tissues, either because, like *strychnia* and other similar poisons, it is not a living organism, or because the resisting powers of the blood and tissues are able to destroy it and prevent its growth, the result being that, unlike *septicæmia*, when the source of infection is removed the disease immediately disappears, and we are glad to make a retrospective diagnosis with the cure of our patient in place of one on the post-mortem table.

It is said that this disease may end in *septicæmia*. I do not know of any decisive evidence for or against this view, but the retention of putrid material is a fertile cause of fatal peritonitis after abdominal operations.

In puerperal *sapræmia* the seat of decomposition is the uterus and vagina, from which absorption takes place—lochia, blood-clot, portions of placenta, or membranes becoming putrid.

Puerperal *sapræmia* differs from puerperal *septicæmia* in being directly amenable to treatment. The symptoms are very similar in some respects; the temperature is high and fluctuating, the pulse quick; but, at least in the earlier stages of the disease, the most severe symptoms are absent, and the aspect of the patient is often quite different from that of a woman suffering from *septicæmia*; and as soon as the uterus and vagina are rendered aseptic, the alarming symptoms immediately disappear, and do not recur if the aseptic condition is maintained.

This disease should never occur. It is preventable by the same means, and far more easily, than *septicæmia*.

A typical instance of such a case occurred some time ago in the outdoor maternity department at St. Bartholomew's Hospital. A patient who had been delivered three or four days had a temperature of  $105^{\circ}$ , and a pulse of 130. I found her lying in foul bedding soaked with decomposing discharges, she having no means of changing the soiled linen. The vagina contained fetid lochia; there was no peritonitis or even marked tenderness



around the uterus, and the woman did not look so ill as I expected to find her. Her uterus was washed out and the bedding changed, and within twelve hours her temperature was normal, and remained so.

This form of sapræmia is only common among the poorest and most destitute, but sapræmia after abortion is common to all classes, and is due to imperfect emptying of the uterus. If the parts remaining behind become putrid, the symptoms immediately disappear after complete evacuation and cleansing of the uterus and vagina.

Before attempting to describe the measures which are necessary to prevent the occurrence of sepsis in a parturient woman, it will be advantageous to consider what are the risks a woman is liable to in the course of her labour and lying-in, and to select from them those which directly or indirectly lead to puerperal sepsis.

We can divide these risks into two classes—

(1.) Those which are inherent in the patient herself, and for which we cannot be held responsible.

(2.) Those which are external, and therefore for which we are in various degrees responsible.

In the first class we include—

(a.) Defects of general health and of particular organs, such as the kidneys, brain, heart, and lungs.

(b.) Structural defects of the uterus, vagina, and pelvis, and of the parts in immediate relation to them, also similar defects and malposition of the foetus, placenta, and membranes.

(c.) Functional defects of the uterus, such as inertia.

Some authorities would add to these a tendency to self-poisoning from the presence of an excess of the normal products of the retrograde metamorphosis of the uterus and other parts, which occurs during the process of involution of the uterus.

I can only regard this theory of autogenesis of puerperal fever as one intended to account for cases the cause of which we are either unable or unwilling to recognise, and as being likely to diminish the incessant precautions which are necessary for the prevention of the conveyance of sepsis.

(2.) The external sources of risk to a puerperal woman are (apart from want of knowledge, care, and skill on the part of the attendant)—

(a.) Defective drainage and infected water supply.

- (b.) Contagion conveyed by the medical attendant.
- (c.) Contagion conveyed by the nurse.

That defective drainage and water supply are not more fertile sources of disease than they appear to be, is certainly a matter for wonder when we consider how great, in the large majority of houses at the present time, is the liability of the water supply being contaminated by sewer-gas, owing to the waste-pipe of the cistern opening directly into the soil-pipe, and that the water-closet and the housemaid's closet may provide a direct communication between the sewer and the lying-in room.

We may well hesitate, however, before we advise our patients to embark on the great expense and worry of having these things set to right; yet our duty in these matters is simple, and is to see that our patient does not go on blindfold, in ignorance of the dangers which surround her and may cost her her life, content with the report that all is in perfect order; but we must advise that a competent and trustworthy man be appointed to give a minute report of all essential details, into which it is not necessary now to enter; they are getting to be well known and are clearly defined.

If we are called upon to attend a patient in such a defective house, we may do something in the way of precaution by flushing the closets and sinks, by the free use of antiseptics, and by avoiding the use of the water (unless it has been boiled) for the purposes of bathing and drinking; but at any time a regurgitation of warm sewer-gas may imperceptibly flood the house, baffling all our precautions.

If a parturient patient develops fever in such a house, the only thing to do is to move her out of it as quickly as possible, the risk of moving her being slight compared with the risk of allowing her to remain.

Another matter allied to this part of the subject is the ventilation of the lying-in room. The days are past when it was thought best to keep windows closed and blinds drawn. Now we recommend plenty of fresh air and sunlight at suitable times.

In lying-in hospitals there is an additional risk, from which women confined in their own homes are almost wholly free, namely, from the use of diapers and bedding which have been used by other patients. This is a fertile source of infection, and is due to the inefficient supervision of laundry arrangements, coupled with an insufficient supply of linen. There happens to be a press of cases; the cleansing, disinfection, and drying are imperfectly carried out, and an outbreak of fever follows. The risk from diapers can be completely avoided by the use of

diapers made on the plan of the so-called "sanitary towels," which are burned after use. At Queen Charlotte's Hospital they are made very easily and cheaply by the nurses in their spare time. In general practice they are of great value, and are easily procured or made. The same precaution in these matters should be observed by the charitable ladies who supply the poor with "confinement bags."

We now have to consider the essential part of our subject, the prevention of the carrying of sepsis by the nurse and medical attendant. That this is the fundamental point in both hospital and private practice is proved beyond all doubt. We will consider this in three parts:—

- (1.) The sources of infection.
- (2.) The means by which it is conveyed.
- (3.) The means for preventing conveyance of infection.

It is quite possible that there may be some who say, "We admit the mortality of some lying-in hospitals, and that they are rarely free for any considerable length of time from fever cases, some of which prove fatal, but we do not see this in our own practice, and therefore special precautions are needless." We answer, that unless it can be shown that there are no cases of unhealthy wounds, diphtheria, erysipelas, or septicæmia to be treated by the same practitioner or nursed by the same nurse who attends confinement cases, the sources and the means of infection are at hand, and only the most careful attention to antiseptic principles will prevent puerperal septicæmia and the lesser complications of a similar nature.

And I submit the following propositions for consideration:—

1. That the dangers of infection a woman incurs from her doctor and nurse are the same *in kind*, whether she is confined in her own home or in a lying-in hospital.
2. That the risk is greater *in amount* in lying-in hospitals, because the facilities for conveyance of infection are so much greater.
3. That in private practice the risk from the nurse is more easily controlled than that from the doctor.
4. That the risk from the nurse is reduced to a minimum when she has been properly selected, and the patient can command her entire services, as in the better class of private practice.
5. That, conversely, the risk from the nurse is increased in proportion to the number of cases she is allowed to attend at the same time.

6. That the risk from the doctor cannot be controlled to the same extent *without antiseptic precautions*, so long as he is liable to come in contact with the sources of infection.

It will be seen that these propositions do not in any way controvert the principle laid down many years ago by Dr. Matthews Duncan, that the mortality of private practice and of lying-in hospitals differed less than was generally believed. See "Mortality of Childbed and Maternity Hospitals," J. M. Duncan, 1870.

What are the sources of infection?

They are chiefly cases of pyæmia, septicæmia, and erysipelas, whether puerperal or not; the post-mortem examination of recently dead bodies, as well as the dissection of bodies not properly preserved.

Many in England hold the opinion that scarlet fever is another source, producing in the puerperal woman septicæmia, and the latest supporter of this view is Dr. Galabin, the reporter for the Collective Investigation Committee on this subject. He discusses this in his recently published and valuable "Manual of Obstetrics." Any one, however, who reads the chapter on puerperal fever will observe that his view of the subject is one-sided, and that he omits even to mention, much less discuss, certain fundamental facts which must be considered in regard to the relation of scarlet fever to puerperal fever. One is, that scarlet fever in a puerperal woman is known often to run a simple course as scarlet fever without septicæmia; the other is, that there is a disease simulating scarlet fever, and easily mistaken for it, almost certainly septic in origin, which occurs after operations, especially in children; also that various rashes frequently appear in cases of septicæmia, some of which closely resemble that of scarlet fever.

Probably we may sum up the important question of the relation of scarlet fever to puerperal fever in the following way:—If a puerperal woman, otherwise in good health, contract scarlet fever from a simple case of scarlet fever, the fever will run an ordinary course as scarlet fever; but if she be infected from a case of so-called malignant scarlet fever, or is in a suitable state of ill-health, the disease may run a rapidly fatal course, resembling some cases of the most acute septicæmia; but the lungs, and perhaps the kidneys, rather than the peritoneum, will be most obviously affected both before and after death.

An instance of the different effects on different individuals of apparently the same source of scarlet fever infection occurred when I was a student at the Sussex County Hospital. At the



same time two or three of us had sore throats and malaise; another developed severe scarlet fever, which was followed by acute nephritis, several months elapsing before his complete recovery; another developed most malignant scarlet fever, which proved fatal in two or three days. Had he been a puerperal woman, the death would probably have been recorded as one from puerperal fever, due to scarlet fever infection.

It seems hardly necessary to discuss in detail such evident sources of infection as cases of pyæmia, septicæmia, and erysipelas. No one would go direct from such a case to deliver a woman or to perform any important operation.

The dissection of recently dead bodies as a source of infection is now generally recognised. It is needless to do more than to refer to the dangers of blood-poisoning of various degrees to which those are exposed who are engaged in making post-mortem examinations, for we have the direct evidence which has been long accumulating in the large lying-in institutions on the Continent, and a great diminution of their mortality has taken place since the views of Semmelweis, at first bitterly resented and opposed, have been accepted and acted on, and more stringent precautions are being taken against this source of danger with the most favourable results.

We now come to the means by which infection is carried. It is important in this to state first the means which are most direct, most frequent, and common to all circumstances, whether of private or hospital practice; and I unhesitatingly place first the fingers of those who have to touch the generative parts of the patient, namely, the doctor and the nurse; next in importance, their clothes; and then appliances used, such as bedding, diapers, sponges, syringes, and obstetrical instruments.

Of these, bedding, diapers, sponges, and syringes as means of infection apply only to lying-in hospitals, or to the poorest patients, who are attended by midwives, who may use these things in succession to a series of women. A few simple precautions are sufficient to avoid risk from some of these causes:—

1. Sponges may only be used if a new one is provided for each patient. In hospital or charity practice they are absolutely interdicted, cotton-wool or tow being used in their place, and burnt immediately after use.

2. Diapers should never be used for two or more patients. In hospital and charity cases they should be made of some material which is absorbent, and burnt immediately after use.

3. Syringes are not the best means for applying vaginal douches. If they are used, each patient should have her own. In hospital

or charity cases the vaginal pipe should be of glass, and the syringe is better replaced by the douche can.

4. Obstetrical instruments should be thoroughly cleansed after use, and before use should be placed for at least a minute in 1-2000 sublimate solution or in 1-40 carbolic solution.

The management of bedding, like the principles of construction and management of lying-in wards, belongs wholly to lying-in hospitals, into the management of which it is not the purpose of this paper to enter.

5. With regard to dress, it is important that the nurse's should be made of washing material, and that on commencing a new case she wears a clean and freshly washed one.

If she has attended a case of septicæmia, the dress should be burnt, as there is no way of absolutely ensuring safety if it be again worn.

With regard to the doctor's dress, if he be careful to prevent soiling his clothes, no other special precautions are needed, unless he has an infectious case; then, if he has occasion to make a vaginal examination or any similar manipulation, he should remove his coat and turn up his shirt-sleeves, taking the greatest precautions against soiling them, and, in case they are soiled, he should have them thoroughly cleaned, and not use them again when attending another puerperal patient.

The use of antiseptics as prophylactic in the lying-in room is simple, but must be rigidly adhered to. In general practice the nurse, if she arrives aseptic, is extremely unlikely to be the means of subsequently conveying infection, whereas the doctor may at any of his visits convey infection from some known or unknown source.

In hospital practice, however, the nurse is more likely to carry and spread infection; in her frequent attentions to a series of patients she may spread septicæmia wholesale.

There are two cardinal rules for routine use.

6. No examination or manipulation is to be performed either by doctor or nurse without previously cleansing the hands and nails with soap and water and a nail-brush, and subsequently rinsing them thoroughly in an antiseptic solution.

This rule is probably of more importance than any other.

7. An antiseptic vaginal douche should be used twice daily during the first week after delivery.

The question then arises, Which is the best antiseptic? Unquestionably the best is corrosive sublimate solution of a strength of 1 in 2000 to 1 in 4000; and were it not for the risk

of poisoning by the use of too strong solutions, it would by now have taken the place of all other antiseptics for this purpose. The use of this agent has brought down the morbidity of some lying-in hospitals,—such, for instance, as the General Lying-in Hospital under Dr. John Williams and Dr. Champneys, and the Royal Lying-in Institution at Dresden under the care of Professor Leopold (the details of which have been published), as well as others of which we have not precise details,—to such an extent that other means besides a table of mortality must be used for the purpose of yearly comparison of results, and from the General Lying-in Hospital, amongst others, we have now a table of morbidity indicating the number of patients whose temperature rose above  $100^{\circ}$  during their stay in the Hospital.

TABLE showing Morbidity among Patients admitted to Lying-in Wards of the General Lying-in Hospital, during Successive Periods of Four Months each, from 18th September 1883 to 31st December 1884.

Patients.	September 18 to December 31, 1883.	January 1 to April 30, 1884.	May 1 to August 31, 1884.	September 1 to December 31, 1884.
Number of patients who had—				
Fever <sup>1</sup> from scarlatina .	1	11	1	3
„ „ septicæmia .	37	10	0	2
„ „ state of bowels and breasts . . .	34	35	36	24
Fever from other causes .	11	8	15	9
Total . . . .	83	64	52	38
No fever . . . .	22	30	44	106
Total number admitted	105	94	96	144

This table was brought forward by Dr. Boxall at a recent meeting of the Obstetrical Society. It shows that before the use of corrosive sublimate four-fifths of the total number of patients admitted suffered from pyrexia of some kind, and in a similar period during its use rather less than one-third of the total number suffered from pyrexia. It also shows that the principal diminution is in the number of septic cases.

It is not too much to say that these results were due very largely to the minute attention to details and the strict supervision over those engaged in carrying them out on the part of

<sup>1</sup> Temperature of all patients taken in the mouth every four hours, night and day, during whole puerperium. Any rise above  $100^{\circ}$  reckoned as fever.

Dr. Boxall, who was then resident, and is now one of the visiting physicians.

No other agent has produced such good results in lying-in hospitals, where the risk, though nearly the same in kind as in general practice, is greatly increased in amount, as above stated. But in general practice, where the risk is less under ordinary circumstances, Condyl's fluid or carbolic acid, 1 in 40, or Tr. Iodi.  $\mathfrak{z}$ i. to a pint, may be quite sufficient. But if there is any reason to fear that we may carry infection from a case of erysipelas or septicaemia, the sublimate is the most trustworthy, and should then be used.

There are certain precautions to be observed in using the sublimate, especially if it has been necessary to irrigate the uterus. It is not safe to use a stronger solution than 1 in 2000, and it is very important that none should be left behind in the uterus or vagina to be absorbed—a thing which may very easily happen. Each  $\mathfrak{z}$ i. of a 1-2000 solution will contain  $\frac{1}{4}$  gr. of the perchloride. (The liquor hydrarg. perchlor. P. B. is of about the strength of 1 in 1000.)

In order to prevent this retention, it is best to complete the douche with a good quantity of plain hot water, and then by pressure to completely empty the uterus and vagina.

It is rarely necessary or beneficial to irrigate the uterus more than once or twice. If it is required in any case, it is best not to repeat the sublimate, but to use Condyl or carbolic acid, or to place an iodoform suppository in the uterus.

The sublimate must not be used in cases in which the kidneys are affected.

It is important to remember that corrosive sublimate, Condyl's fluid, and iodine are decomposed and rendered useless by soap, so that the hands must be free from soap before they are placed in the antiseptic; also that concentrated solutions of corrosive sublimate must be made with distilled water, as hard water precipitates the mercury.

There is another use for antiseptics in midwifery, namely, for the prevention of ophthalmia in the infant. If the mother is suffering from any suspicious vaginal discharge, a copious antiseptic douche should be administered at the commencement of labour, and repeated if the labour is protracted.

There are other measures as truly antiseptic as those already given, which have not been even alluded to, such as the relief of protracted labour, the complete expulsion of the placenta and membranes, and the production of perfect retraction of the uterus. All these, if not properly attended to, open the door widely for the admission of infective material, and are of grave importance



as auxiliary causes of septicæmia. We must, therefore, spare no trouble to perfect, and, if possible, extend our knowledge of the science and practice of midwifery, without which our other antiseptic precautions will not have their full amount of success.

There is another subject of very great importance—the education of midwives. We are naturally and properly offended with chemists who prescribe even for simple ailments, and yet the country is allowing a great body of women, the large majority of whom have had little or no proper instruction, to take the enormous responsibility of acting as midwives. What is the good of talking to them of antiseptics? It is difficult enough, and only possible under the strictest supervision, in lying-in hospitals to get the simplest antiseptic measures systematically carried out by the nurses who are training there, because they have, with few exceptions, had no previous training as nurses, and have no idea of their meaning and importance. They look upon them as a mere whim, entailing much extra trouble.

The Obstetrical Society is doing a great deal by the examinations for its diploma to improve this state of things, but we must look forward to a more complete scheme, by which the country will insist that all women must be properly trained and proved competent before they will be allowed to act as midwives.

Any woman who aspires to obtain a high position as a midwife should first undergo a thorough training in a general hospital for, if possible, a period of two years.

# TWO CASES OF CANCER OF THE BREAST, TREATED BY CAUSTICS.

BY

HENRY T. BUTLIN.

In the following short paper I purpose to give an account of the destruction and removal of cancer of the breast in two women, one of advanced age, the other of very weakly constitution. My object is to describe the treatment from the operating surgeon's point of view. The caustic which was employed was Vienna paste for the integument, and Bougard's paste for the parts beneath the skin. Vienna paste, as most surgeons know, consists of equal parts of caustic potash and caustic lime, well powdered and made into a paste with alcohol; it acts rather more slowly than caustic potash, but is more easily confined to the part which is to be destroyed. Bougard's paste is thoroughly described in his work "*Études sur le Cancer*" (Brussels, 1882). It consists of—

Wheat flour	.	.	.	.	.	60 grammes.
Starch	.	.	.	.	.	60 „
Arsenic	.	.	.	.	.	1 gramme.
Cinnabar	.	.	.	.	.	5 grammes.
Sal-ammoniac	.	.	.	.	.	5 „
Corrosive sublimate	.	.	.	.	.	0.50 centigrammes.
Solution of chloride of zinc at 52°	.	.	.	.	.	245 grammes.

All the ingredients, with the exception of the last, are separately ground and reduced to fine powder; they are then mixed in a mortar of glass or china, and the solution of chloride of zinc is slowly poured in, while the contents are kept rapidly moved with the pestle, so that no lumps shall be formed. The soft homogeneous mass is poured into an earthenware pot with a cover, and may be kept for several months.

In a work recently published I have described Dr. Bougard's method of applying this paste ("The Operative Surgery of Malignant Disease," London, 1887, p. 362). In the two cases presently to be related, his instructions were followed out as closely as possible.

CASE I.—Elizabeth D., 74 years old, was sent to my out-patient room in March 1886, on account of an ulcerated carcinoma of the right breast. She had first noticed it four years previously, when it lay deep in the substance of the mamma, and appeared to be as large as a walnut. With slow increase in size, it gradually reached and broke through the skin just before Christmas 1885. It was about as large as an orange when she first came under observation, and occupied the middle of the right breast; in the centre was a hollow ulcer, from which a tolerably abundant foetid discharge issued. She suffered pain, but by no means severe pain. In the axilla was one enlarged gland, the feel and size of which did not produce the impression that it was cancerous. In spite of her age and the large size and ulcerated condition of the tumour, the patient appeared to enjoy fairly good health, and was active in body and mind.

Seeing that an operation for the removal of the disease must needs be severe, and that in spite of the ulceration she suffered little from the presence of the cancer, and, moreover, finding that she was not at all anxious for an operation, I advised that the disease should be allowed to run its course, and that the only treatment should be palliative. She continued therefore to attend the out-patient room, and our efforts were directed to reduce the quantity and improve the character of the discharge, and to render the sore aseptic and as little painful as possible.

In the course of about two months she began to suffer much more pain, and was urgent at every visit that something more active should be undertaken for her relief. It occurred to me that this was a favourable case for treatment of the disease by caustic; for the tumour, although large, was not adherent to the subjacent muscle; there were no separate nodules in the skin around the ulcer, and the axillary gland was by no means certainly malignant. She was therefore admitted into Casualty Ward on May 22d.

On May 28th the area of skin which was to be destroyed around the ulcer was carefully marked out with a pen and ink, a morphia draught was administered to the patient, and a layer of freshly prepared Vienna paste was rapidly applied with

a soft brush, from the margin of the ulcer up to the ink-line. The surface of the ulcer was not covered. The skin became red, then black, and in less than ten minutes appeared to be quite destroyed. The caustic was then removed with pellets of cotton wool, the surface was dried with lint and cotton wool, and several bleeding points were touched with nitrate of silver-stick. A layer of Bougard's paste, about one-sixth of an inch in thickness, was now applied over the whole surface of the ulcer and the blackened skin.

During the application of the Vienna paste she undoubtedly experienced severe pain, but being a courageous woman, bore it without murmuring. Bougard's paste did not appear to cause much pain. It was surrounded closely and covered by lint, over which was placed a compress of cotton wool, and the whole was kept in place by a bandage.

At the end of five or six hours the compress and the caustic were removed and replaced by a linseed-meal poultice which was changed from time to time during the night and following morning.

Four-and-twenty hours after the commencement of the treatment, the eschar, which was about half an inch or more in thickness, was removed by cutting through it with a pair of scissors at a distance about one-sixth of an inch from the margin of the living skin. In some places it separated easily from the parts beneath; here and there it needed to be loosened with scissors and forceps. There was no pain connected with this manœuvre, unless an attempt was made to remove more than would come away with tolerable ease. A layer of Bougard's paste about half an inch in thickness was applied over the whole surface which had been cleansed, and was pressed down by means of a pad and bandage, care being taken, as on the previous day, to protect the surrounding skin. After six hours the caustic was replaced by a poultice.

Every day until June 10th, with one or two exceptions, the eschar was removed and fresh paste was applied. By this time the whole of the disease appeared to have been removed, for the eschar was no longer hard and dull white, as it had been, but much softer and of a yellowish colour. Judging, too, from the depth to which the disease had extended before the treatment was commenced, sufficient destruction had taken place. Poultices were applied until the slough had completely separated, when a very healthy granulating wound, of much smaller size than might have been expected, was exposed.

On the 29th June two or three small nodules on the surface of the wound, of suspicious aspect, paler and firmer than the surrounding parts, induced me to order a re-application of the



paste over the area in which they stood. A single application served to destroy them; the wound healed rapidly under some simple dressing, and on the 23d July the patient left the Hospital.

I have seen her within the last three weeks (October 20th, 1887), more than a year and a quarter after the operation. The scar is smooth, soft, pliable, and not adherent to the parts beneath. The enlarged axillary gland can no longer be perceived.

CASE II.—Mary Ann P., æt. 60, was admitted into Casualty Ward on the 28th July 1886, after she had been three months under my care in the out-patient department. She was suffering from a large, prominent, ulcerated growth, as large as a man's fist, of the left breast, very hard, bleeding easily on the slightest touch, and discharging abundantly. There were no enlarged glands in the axilla. The disease had commenced about eighteen months previously, and had steadily increased in size, until, fourteen days before I saw her, the skin had begun to ulcerate.

She had at first desired that no attempt should be made to remove the disease, and I had never urged its removal, although the freedom of the subjacent parts and the absence of enlargement of the lymphatic glands were favourable conditions for radical treatment. But the patient was fat and flabby, wheezy, with a small and feeble pulse, and her appearance betokened a very defective circulation. The increasing size of the ulcer, however, and the pain which she suffered from it, led me at length to consider seriously the propriety of an operation. Feeling sure that her unsound constitution would not serve to sustain the shock and subsequent healing of a rather severe surgical operation, I finally determined to remove the disease by caustic.

On July 30th, Vienna paste was applied, as in the last case, for ten minutes, and was then replaced by Bougard's paste. Owing apparently to some defect in the quality of the paste—perhaps that it was stale—it failed to perform its work efficiently. The skin was destroyed only over limited areas, and this perhaps was a fortunate circumstance, for very severe constitutional disturbance followed this, the first stage of the treatment. The temperature rose during four days, until, on the 1st and 2d of August, it reached  $103^{\circ}$  to  $104^{\circ}$ ; the pulse was from 112 to 132, very irregular in force and frequency, and altogether very feeble. The patient was tremulous, slept badly, and took very little nourishment. Her condition was so alarming that I was inclined to desist from further treatment. But by the 11th August the

temperature had fallen to normal, and she was so much better that a few days later Vienna paste was again applied to the skin which had escaped on the previous occasion. The temperature again rose, and on the 21st August reached  $101.4^{\circ}$ , but from this point it fell, and the constitutional symptoms associated with it subsided.

Bougard's paste was applied as in the first case, and the surrounding skin was protected by soap-plaster spread on leather in the place of lint. But the applications of the paste could only be made at long intervals on account of the disturbance which followed every one of them. The temperature, indeed, never rose to the same height as on the first occasion, nor were the associated symptoms so alarming. But every renewal of the treatment was followed by such symptoms as to make me very cautious not to do too much at one time. Owing to the slow progress which was consequently made, it seemed from time to time as if the growth of the tumour might be more rapid than the action of the caustic, and that we might never succeed in removing the disease. Even when the prominent mass had been removed, and a healthy granulating wound remained, buttons and nodules of cancer sprang up amongst the granulations at frequent intervals. They were freely destroyed with Bougard's paste as they appeared, and with them a wide area of the surrounding healthy tissues. But it was not until October 23d that the last applications of the paste were made. From this time the wound healed steadily, without the appearance of recurrence of the disease, and on the 22d November the patient left London for our Convalescent Home at Swanley.

I have not seen her since.

The commentary which I shall make on the foregoing cases shall be short.

First, they illustrate well the class of cases which appear to me to be, above all others, suitable for treatment with caustics. The disease, although of considerable size, was nevertheless localised, and thoroughly within reach of removal or destruction; the skin was not very widely affected; there was no cancerous disease of the associated lymphatic glands. The patients, on the other hand, were neither of them good subjects for a tolerably large surgical operation. The one was very old, the other was very feeble. I do not say that the treatment by caustics should be limited to cases such as these, but I do say that it would be difficult to find more suitable cases.

Second, it sounds almost trite to say that the treatment by caustics is less dangerous to life and more painful than the treatment

by the knife. These observations have been made many times before, and I do not know that any one really doubts the truth of them. For, taking the latter proposition first, there can be no question in the mind of any operating surgeon that destruction of the skin by caustics produces much more severe pain than is experienced by patients who have been subjected to even large operations with the knife. Even in those cases of amputation in which union by first intention has completely failed and the healing of the wound is slow and painful, the pain is, I believe, far less than that which is felt in the most successful cases of destruction by caustics. A third patient, who refused amputation of the breast, and in whom I commenced to destroy the disease by caustic, complained so bitterly of the pain, that, after two or three applications, I was forced to give it up and to have recourse to the knife.

With regard to the relative mortality of amputation and destruction by caustics, I may refer to the results in the last chapter of the book which I have quoted. If it be thought that Dr. Bougard's results have been unusually fortunate so far as freedom from death is concerned, a kind of collateral evidence may be obtained from what we know and hear of the practice of cancer quacks. They often fail to cure their patients, it is true; but, on the other hand, it is equally true that, in this country at least, they very seldom kill them. As unqualified persons, they have not the power of signing death certificates, and in such matters they are unlikely to be covered by qualified practitioners. So that we may fairly assume that, in spite of the large number of persons whom they have treated and still do treat, they seldom have the misfortune to produce an immediately fatal result. Yet the history of the second case shows that the treatment by caustics is capable of exciting severe constitutional disturbance, and may be fraught with grave danger to life. I suspect that the cancer quacks are very careful, and often very sagacious, in selecting suitable cases for their treatment, and that they pursue it in the less favourable cases with extreme caution, preferring, if the choice must be made, never to destroy the disease, but to allow it constantly to outrun destruction rather than to run any risk of causing death.

Third, of the caustics used, I may say that both the Vienna paste and Bougard's paste appeared to me very well adapted to the work they had to perform. The former ought to be freshly prepared for use and carefully mixed. The latter does not seem difficult to prepare, keeps well, is easily held within bounds, and performs its work efficiently. The only difficulty in managing



it is that it is so viscid that it is difficult to spread it evenly over the surface of the wound. Soap-plaster spread on leather protects the surrounding skin better and more easily than lint.

In conclusion, I would not merely suggest that caustic may be employed with propriety in certain cases of cancer of the breast and other parts, but I would urge that it should be used far more frequently in surgical practice than it hitherto has been. I do not know whether it affords a better guarantee against recurrence of the disease than the means which we at present employ, but I do believe that it affords quite as good a guarantee, and I fully believe that its use is attended with a very small risk to life. Under these circumstances it seems only reasonable that we should avail ourselves of it in cases in which there are reasons to dread a surgical operation, and that in many other cases we should at least give our patients the choice between caustics and the knife, setting before them as clearly as possible the amount of risk to life on the one hand, the pain and slow course of the treatment on the other hand. The prejudice against the use of caustics is in our profession very strong, partly because they have fallen for the most part into the hands of quacks, partly because we are not in the habit of employing them, and are in practice ignorant equally of their vices and their virtues. Indeed, the feeling is so strong against them, that I write this paper in a kind of fear lest it should be said that I am advocating unsurgical practices. But I have no hesitation in accepting this risk. Our relation to the cancer quacks at present is much the same as it was a few years ago to the bone-setters. Again and again patients who had been long under our treatment, and whom we had failed to cure, passed into the hands of bone-setters and were cured forthwith. We listened incredulously to the oft-repeated stories of the ways in which the cures were wrought, and put them aside as idle tales, never thinking it worth while to verify them or to make ourselves acquainted with the methods practised by our successful rivals. Of late years a change has taken place; observation and practice have enabled many members of our profession to select fitting cases and to apply successfully the bone-setter's manipulations. As time goes on this knowledge will become the property of every medical practitioner, and the field of the bone-setter will be set within narrower and narrower limits, until at length there may be no work for him to do. In the same way many of our patients with cancer fall, through an apprehension of the knife, into the hands of the cancer-quacks and are treated successfully, at least as successfully as we could treat them, by means of caus-



tics. As we have endeavoured to meet and defeat the bone-setter, so must we meet and defeat the cancer-quack, not by ridiculing his methods and refusing to credit the account of his successes, but by making his methods our own and by employing them with a far better knowledge of disease than he is ever likely to attain to.

# A CASE OF TUMOUR OF THE CEREBELLUM,

WITH

REMARKS ON CEREBELLAR STAGGERING.

BY

W. P. HERRINGHAM, M.B.

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Alfred G., aged 16, died on April 30, 1886, of a tumour in the cerebellum, at his own home in the country. I examined his head on May 3. I found the skull and meninges were natural, and the foramen of Magendie free. The lateral ventricles were very greatly distended with fluid, so that the cortex over them was reduced to an eighth of an inch in thickness. There was no other disease in the cerebrum. The cerebellum looked natural from above, but a hard tumour was felt in the middle lobe. After hardening, the tumour was egg-shaped,  $1\frac{1}{4}$  inch long, three-quarters of an inch high, and one inch broad. It shelled clean out of the brain substance, and lay entirely in the middle lobe, though rather more to the right than the left side of it. It was about an eighth of an inch from the superior surface, an inch from the posterior end of the middle lobe; below it bulged naked into the fourth ventricle, and forwards it bore upon the upper end of the medulla and the superior velum. The pons and medulla were considerably flattened.

Microscopical examination proved it to be a psammoma, the cell-nests being distinct; but the state of the specimen prevented any minute details from being accurately made out.

Eleven months before death he had, according to his own account, been thrown off a horse and kicked on the back of his head. No symptoms were noticed for two months. Then he began to have headaches, both frontal and occipital, which continued to occur until death. He also had a fit at the same time, and these occurred about once a month ever after. One of them, occurring while he was in the West London Hospital, was thus described by the nurse:—He was walking at the time, and began

to stagger, upon which he was at once laid on a bed. For two minutes he was unconscious, his eyes fixed and his limbs and trunk rigid. He then began to "struggle," and soon after became quiet. He apparently was quite stiff for all, or nearly all, the time of unconsciousness, and the "struggling," in which he opened and shut his hand, occupied a very short period.

A month later, eight months before death, he staggered when walking. This symptom also lasted to the end of his life. He did not, as far as I could judge, tend to fall in any constant or even certain direction.

After another month he saw double and squinted, and five months before death his sight failed.

Vomiting had taken place at intervals, probably from the earliest times of his illness.

Three months before his death he came into the Hospital. He was then completely blind, the discs very white, with tissue overlying the vessels, a condition of atrophy after papillitis. There was right internal strabismus. The right facial nerve soon after admission became paralysed in the mouth twigs only. Aerial hearing was less on the left side, but perosseous hearing was equal. There was no paralysis of tongue, palate, arms, or legs. Sensation and cutaneous reflexes were natural. Deep reflexes natural in the arms; knee-jerks equal, perhaps increased; clonus on hitting the stretched tendo-achillis. Micturition and defæcation natural.

When lying in bed no disorder of movement appeared.

He could touch any part of his limbs and body, and he knew the position of his limbs as he lay. He was not found to fail in any ordinary actions, such as lifting food or dressing himself, but when put on his legs he swayed about, and would have fallen if not supported.

There was a peculiar lateral movement noticed in the eyes. When lying on his back or left side or when sitting up, the eyes fell slowly to the left, and were then jerked back to the direct forward position. This, which did not occur when he lay on his right side, was a constant symptom during his stay.

A month before death he had retraction of the head toward the left shoulder. This continued until the middle of April, when he left to go home. His death, which occurred a fortnight later, was quite sudden. He gave a cry, turned blue, seemed to struggle for breath, and was dead in a few minutes.

There are several points in this history upon which it is useful to comment. First, the tumour occurred, as is usual, in a male. This preference for males is ascribed by some to their greater

liability to injury ; and though it has been objected that the difference between the sexes in their liability to brain tumours begins too early in life to admit of this explanation, yet I cannot think the objection is valid. Boys, from the time they can walk, are of continuously suicidal tendencies, and, partly from this, partly from a belated and solitary relic of chivalry, they undoubtedly receive at the hands of the poor much rougher treatment than girls. A stronger objection is that surgeons do not seem agreed that tumours in other parts are caused by injury.

Psammoma is a rare form of tumour. In fifty consecutive published cases, where post-mortem examinations were made, ten were vascular lesions, six were abscesses, thirteen were tubercle, four were simple cysts, seven were gliomata, and of the rest one only was a psammo-sarcoma.

As regards the symptoms, the first that appeared was, as usual, pain ; and in addition to vomiting and optic neuritis, common to all tumours of the brain, he presented others due to the special site of the growth.

Of these latter, some are due to the involvement of cranial nerves, the facial and the sixth on the right side. The facial is the nerve most commonly paralysed in cerebellar tumour. The paralysis usually, like any other form of peripheral facial paralysis, includes all twigs, whereas in this case it resembled a central affection in being limited to the mouth area only. The explanation is, I think, merely that the tumour did not press greatly upon the nerve (paralysis was only noticed after he had been a fortnight in the Hospital, and increased visibly afterwards), and that owing to some accident of position it did not involve the whole.

There remain to be considered, first, the peculiar oscillation of the eyes ; secondly, the staggering ; and lastly, the spasms.

Physiological experiment differs widely from the pathological in connecting the cerebellum with movements of the eyes. In experiments on monkeys, small areas in the middle lobe can be made out whose stimulation produces regular and simple movements to the right or left, upwards or downwards. But I think it is safe to say that a definite and permanent deviation of both eyes has never been described in connection with any disease of the cerebellum alone ; and though lateral nystagmus, or regularly recurring deviation, such as this boy presented, is mentioned in a few cases of the fifty-six whose records I have collated, yet in not one of these could distant irritation be excluded, for in most the ventricles are said to have been distended, and in none of them was the disease so circumscribed as to confine its action within the cerebellum alone.

Until a few uncomplicated cases present the symptom, we



cannot consider eye-movements as a natural product of simple cerebellar disease.<sup>1</sup>

The staggering of cerebellar disease differs from that of locomotor ataxia, since in the latter case the legs run away from the body, while in the former the body goes before the legs. The same effect is produced by diphtheritic paralysis or myelitis, which cause the legs to lag behind the body, and it is exactly imitated in drunkenness. Much has already been written upon it, but room yet remains for more accurate analysis. It has often been called incoördination, and the cerebellum has been spoken of as the organ of co-ordination, implying thereby that the paralysis involved in its diseases was a general loss of the power of complex movement. But it is quite certain that in some cases of cerebellar disease there is so much of the peculiar cerebellar paralysis that the patient is unable, not only to stand, but even to sit up, and yet that his limbs are able, if he lie down, to perform, singly or together, the most complex of movements. His unsteadiness depends upon the erect position, or, in other words, it is an inability to maintain his equilibrium.

Few realise that the accurate maintenance of equilibrium is one of the most difficult and rarest accomplishments. A graceful person—and grace is merely the power of poising—is admittedly far rarer than a well-made or a handsome one. To obtain this conviction, one need only either try to walk gracefully, or watch the general populace in its efforts to do the same. It is quite a different muscular power from that which enables a man to play games well. A man who is graceful is usually, but not always, a good player, but many an excellent oar, cricketer, or tennis-player is extremely clumsy. The qualities which excel in games are partly sensory acuteness, and partly the power of rapid and accurate movement of the limbs, whereas the power of equilibrium, which need not be so much developed in a good player as is commonly supposed, is mainly due to accurate movements of the trunk. While, therefore, I would not be understood to separate entirely the one from the other, I would yet emphasise the fact that staggering is due to loss of action of the trunk, distinct from loss of action of the limbs, such as occurs in either locomotor ataxia or cerebral hemiplegia.<sup>2</sup>

<sup>1</sup> Cp. *Brain*, ii. 29, for a case of auditory vertigo with movements of the eyes like those of this patient (Hughlings Jackson), and Cyon on the semicircular canals (reviewed *Brain*, i. 239), who found movements of the eye to follow lesion of the canals. Ferrier suggests that the cerebellum is the place where the eyes and canals are connected.

<sup>2</sup> In contrasting the limb with the back muscles, it is worth while to remember how differently they are arranged. The back-muscles are all laid in a special groove of their own, deeper than the muscles of the limbs, which latter, truly called appendages, appear to the dissector to have been put on after the axis of the

Let us examine a little further in what the maintenance of equilibrium consists. Put your hand as you walk upon the erector spinæ, and you will feel that when the right leg is put to the ground the left or opposite erector jumps at once into strong contraction. This is not that it may raise or bring forward the other side of the pelvis, for the same thing occurs whenever one stands on the right leg alone. Whatever position the left leg assume when one bends over to the right side, it is again the left erector that is most strongly contracted. After trying various movements, it will be found that whenever the half-unconscious impetus of walking or the voluntary sideways bending of the trunk tends to throw the body off its balance, the muscles of the opposite side of the back are instantly active to prevent it,<sup>1</sup> and that it is a function of each erector spinæ to prevent its owner from falling to the opposite side.

This means, however, that in activity of the right limbs, when we stretch and lean to the right side, the left side of the back is also in strong action, and that the back-muscles are a continual *μηδὲν ἄγαν*, pulling the body back from its desires. There is, therefore, a continual cross-action, and by consequence a cross-innervation, the left back acting with the right limbs, the right with the left. This is the secret of equilibrium.

It has been proved, both by experiment and by disease, that injury to the cerebellum can destroy the power to maintain equilibrium, and therefore that the cerebellum is intimately connected with this function, but it is still unknown by what nervous mechanism the connection is brought about. The anatomy of the cerebellar fibres is as yet too uncertain to aid us,<sup>2</sup> but disease, as Nothnagel has pointed out, whose observation is confirmed by cases recorded since his publication, shows that it is usually in lesions of the middle lobe that symptoms peculiar to the cerebellum occur. This lobe is very seldom diseased without

body was formed and furnished. The back-muscles seem a different and an earlier system, which we might well expect to possess a special nervous arrangement.

<sup>1</sup> The main difficulty in skating the outside edge is to overcome this unconscious action of the erectors.

<sup>2</sup> Our knowledge of the minute anatomy of the cerebellum rests upon some experimental destructions of parts of its substance and observations of the ensuing degeneration, and a very few cases of unsymmetrical atrophy. It amounts at present to this—that in atrophy or destruction of one lobe of the cerebellum the tracts which degenerate in consequence are the three peduncles of the same side and the opposite olivary body. The superior peduncle belongs to the system of the opposite tegmentum, and is, according to Meynert, part of the sensory arrangements; the middle peduncle is connected with the opposite crusta, and is probably motor. The inferior peduncle contains the near lateral cerebellar tract, the fibres from the far olive, a bundle to the near lateral nucleus, and another to the near fasciculus cuneatus. Of these parts there is not one of whose function we have even a probable suspicion.

the appearance of such symptoms, whereas the lateral lobes may be almost destroyed, and yet they may not appear. Nothnagel also shows clearly that these distinctive effects are due to the lesion of the cerebellum, and not to interference with contiguous parts. The tract of equilibrium therefore passes close to, if not through, the middle lobe, and it is a possible supposition that this latter forms a commissure or intersecting track within the cerebellum itself, giving a second decussation to the nerve fibres connected with it.

If we look upon the cerebellum as specially connected with the muscles of the back, the peculiar tonic rigidity or tetanic spasm which occurs so often in cerebellar disease must be considered as corroborative evidence. These convulsions are mainly tonic in character and axial in place, and though the limbs are frequently involved, their spasms seem quite secondary in importance to those of the trunk. It seems doubtful whether the persistent retraction of the head noticed so often in these cases is produced by the same influence as the convulsions, or whether it is an effect of local irritation of the upper spinal nerves.

Reviewing, therefore, the facts advanced in the preceding pages, it appears —

1. That the cerebellum presides over the innervation and co-ordination of the axial muscles.
2. That the special aim of such co-ordination is to preserve the equilibrium.
3. That this occurs by a cross-action and a cross-innervation of the muscles.
4. That perhaps the nerve-trunks going to these muscles have an extra-decussation in the cerebellum itself.
5. That disease of the middle lobe of the cerebellum produces, first, paralysis of these muscles and loss of equilibrium; second, convulsions of the same muscles and opistho-tonic spasms.

*Note.*—Since this paper was written a corroboration of some of its views has presented itself, so curious that I am constrained to give it. A cat in Hope Ward bore four kittens. All soon after birth were noticed to stagger. Two were killed. I saw the remaining two with Dr. F. W. Andrewes. They both had typical cerebellar staggering. We showed one at the Medical Society, when Dr. Hughlings Jackson fully agreed as to the appearance. We killed and examined the other, and found by the naked eye a shrunk cerebellum and yellow erectores spinæ; by the microscope, disease of the cortex of the cerebellum and degeneration of the muscle. All other muscles of the body seemed quite healthy. The cases will be published in detail.

# THE NOTES OF TWENTY CASES OF FOREIGN BODIES IN THE RECTUM.

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D. H. GOODSALL.

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CASE I.—St. Mark's Hospital. J. R., æt. 41, a traveller.

December 20, 1876.—Fish-bone (see woodcut, page 81, fig. 1) removed from the anterior wall of rectum about an inch above the anus.

CASE II.—Metropolitan Free Hospital. G. C., æt. 50, a secretary.

November 13, 1877, 11.30 A.M.—At 9 A.M., while his bowels were acting, he was suddenly seized with pain in the rectum, and with a severe shooting pain in both hips and down both thighs. These pains have not ceased since they began; sitting greatly increases the pain in the rectum. The bone (fig. 2) was removed without an anæsthetic. It had been forced into the rectal wall on its left side about three-fourths to one inch above the anus. After the bone had been removed, about an ounce of enema opii was injected. The bowels were kept confined for ninety-six hours, and then they were relieved by an enema of olive-oil and water. On November 19th the bowels acted naturally without causing any pain or discomfort. No further trouble followed from the accident. The bone was swallowed probably about nine days before it was forced into the rectal wall.

This patient died in November 1886, and during the nine years that followed the accident he had no further trouble from it.

CASE III.—St. Mark's Hospital. J. H., æt. 41, drayman.

January 22, 1879.—Fish-bone (fig. 3) removed from the anterior wall of rectum. He attended for a month as an out-patient after the bone had been removed. During that period he injected



about one ounce of olive-oil into his rectum every night at bedtime. Before the bone was removed he had had for some time constant pain in the rectum and a stiffness and numbness in the left leg.

August 28, 1887.—The patient says he has not had any further rectal trouble since the bone was removed.

CASE IV.—Metropolitan Free Hospital. S. E., æt. 70, iron-founder.

May 28, 1880.—On May 16th he swallowed a bone. On May 24th he had pain in passing a motion, and removed the bone (fig. 4) from the rectum with his finger. On May 28th he attended the Hospital with a blind internal fistula on the right anterior side of the anus. He was admitted as an in-patient, and his blind internal fistula was converted into a complete fistula with a T-shaped external opening. He left the ward on June 18th with the fistula almost healed. On July 9th he was discharged as out-patient, the wound and fistula being soundly healed. The internal opening was small, and was situated about three-quarters of an inch above the anus on the right anterior side of the rectum.

CASE V.—St. Mark's Hospital. W. P., æt. 39, pianoforte-maker.

February 22, 1882.—In November 1881, after a long walk, he felt pain in the rectum and anus; his bowels at that time were constipated. The pain or discomfort continued for about a month, and then a swelling formed on the left anterior side of the anus, and is still there. On examination a blind internal fistula was diagnosed, and was converted into a complete fistula with a large external T-shaped opening.

March 15.—The fish-bone (fig. 5) was removed from the external opening. The removal of the bone gave him complete relief from pain. The T-shaped opening made on February 22d had not done so.

April 22.—The fistula had soundly healed, and there was no tenderness on pressure over its track. This patient was treated throughout as an out-patient.

August 27, 1887.—He has had no further trouble from the fistula. Its track cannot be felt.

CASE VI.—St. Mark's Hospital. H. B., æt. 33, hatter.

June 21, 1882.—Fish-bone (fig. 6) embedded in left side of rectum about one inch above the anus. The bone was removed per anum.

CASE VII.—St. Mark's Hospital. W. B., æt. 47, cabman.

August 2, 1882.—Fish-bone (fig. 7) removed from a complete fistula. The external opening was on the right anterior side of the anus, about  $1\frac{1}{2}$  inches from the rectum. The track of the fistula extended beyond the external opening to a point about two inches from the anus. The internal opening was situated on the right anterior side of the rectum, about a quarter of an inch above the anus. The external opening was enlarged with a T-shaped incision, and the bone was then removed.

CASE VIII.—St. Mark's Hospital. W. M., æt. 52, engineer's labourer.

September 6, 1882.—In March 1882 he swallowed a bone. A few days after he felt a pricking pain near the anus when walking. On April 24th an abscess which had been gathering for several days on the right posterior side of the anus broke of itself, and has discharged constantly ever since then. On May 17th he was admitted into a hospital, where the abscess was freely laid open with a single straight incision. He was in that hospital till August 28th, eleven weeks. He left there because they intended to operate again on him. On September 6th he attended as an out-patient at St. Mark's. His condition then was that he had an incomplete horse-shoe fistula, the external opening on the right side being one inch from the anus, and on the left posterior side  $1\frac{1}{2}$  inch, the track of the fistula extending for an inch beyond the external opening on this side. No internal opening could be detected. There probably had been one in the middle line dorsally between the external and internal sphincters. The external opening on the left dorsal side was freely enlarged with a T-shaped incision. On September 7th the fish-bone (fig. 8) came away with the plug of cotton-wool placed in the opening on the 6th to arrest the bleeding. Before the bone came away he was quite unable to sit properly, because of the pricking pain in the anus. A few days after the bone had come away all discomfort or pain when sitting ceased. In three months the fistula had soundly healed. He was treated only as an out-patient.

October 3, 1887.—The scar of the T incision made at St. Mark's is now  $3\frac{1}{2}$  inches by  $1\frac{1}{2}$  inches. He has not had any pain or discomfort in the part since he ceased attending at St. Mark's in December 1882.

CASE IX.—St. Mark's Hospital. G. T., æt. 49, caulker.

May 23, 1883.—About November 4, 1882, he felt a sharp pain in the rectum; his bowels were being relieved at the time. Since then he has not been free from pain in the rectum or able to

sit properly. The patient has a blind internal fistula, the opening being on the left anterior side of the rectum, about half an inch above the anus. The bone (fig. 9), which was partly out of the opening, was removed from the fistula per anum. No anæsthetic was given. The patient would not allow an external opening to be made to the fistula. On June 14th the blind internal fistula opened of itself externally. After that he could sit properly.

On September 19, 1885, the fistula being still unhealed, the patient was admitted into the wards and operated on in the usual manner. On October 24th (five weeks) he was discharged cured.

CASE X.—St. Mark's Hospital. P. P., æt. 70, bookbinder.

July 4, 1883.—The pin (fig. 10) was removed from a blind internal fistula situated on the right dorsal side of the anus, the opening being on the right dorsal side of the rectum, about half an inch above the anus. The fistula was made into a complete fistula with a T-shaped external opening; the pin was removed through that opening, its point being directed towards the rectum.

November 14.—The patient was discharged cured. He was treated throughout as an out-patient.

CASE XI.—Metropolitan Free Hospital. T. W., æt. 23, soldier.

August 20, 1883.—Early in 1882, while trying to pass a motion, he felt a severe pricking pain in the rectum, and was unable to pass the motion. He kept on guard till relieved, and then went to the doctor of his regiment, who prescribed castor-oil, which quickly relieved the bowels, but the pricking pain in the rectum continued, and a swelling, which had begun to form on the right side of the anus soon after the pain begun, rapidly increased; he was then ordered to poultice the swelling. After three days he was sent to Limerick Hospital, where, five days after the commencement of his illness, the abscess broke of itself. He was in this Hospital for twenty days, and then returned to his regiment and continued on duty for about five months, the fistula constantly discharging. He was then in hospital again for two months, and then went on furlough for two months. He again returned to his regiment, and was then sent to the hospital for about three months, when the fistula not having healed, he was sent (August 14, 1883) before the Army Medical Board, who discharged him from the army as "medically unfit for further service." From the commencement of his illness he has been unable to sit properly. On applying at the Hospital (Metropolitan Free), he had a complete fistula, the external



opening being on the right anterior side of the anus, about  $1\frac{1}{2}$  inch from the rectum, the internal opening being on the right anterior side of the rectum, about half an inch above the anus. He was admitted, and on August 21st was operated on in the usual manner, and the bone (fig. 11) was removed from the fistula; a lateral sinus running from the external opening for about  $1\frac{1}{2}$  inch towards the scrotum was also laid open. On September 7th (seventeen days after the operation) the wound was sufficiently healed for the patient to leave the Hospital, and in another fourteen days it had soundly healed.

November 6, 1887.—He has had no further rectal trouble, and is in good health.

CASE XII.—St. Mark's Hospital. J. G., æt. 35, chairmaker.

April 9, 1884.—Fish-bone (fig. 12) removed from the rectum. The pain began while passing a motion, and lasted continuously for four days, and then recurred only occasionally, and ceased soon after the bone had been removed. On May 21st he was discharged cured, having been treated throughout as an out-patient.

CASE XIII.—Rev. A. R., æt. about 45. Under the care of Dr. John Hall.

March 29, 1885.—On March 25, 1885, while attempting to relieve the bowels, a severe pain in the rectum suddenly came on, and prevented him from passing the motion. After this the rectum and anus were painful and uncomfortable until the 24th, when the bowels were relieved and the pain became less severe. He then went for a walk about three miles; while walking the pain became worse. On the 25th an abscess appeared on the left anterior side of the anus. On the 26th this abscess broke of itself. On the 29th, when first seen by me, he had a complete fistula, the external opening being on the left anterior side of the anus, and about half an inch from it. The internal opening was on the left anterior side of the rectum, about half an inch above the anus. A lateral sinus had also formed, and extended towards the scrotum for  $2\frac{1}{2}$  to 3 inches from the external opening. This sinus was at once laid open to its end. From the history the case was diagnosed as due to a foreign body in the rectum. On April the 7th, as the track of the fistula between the external and internal openings showed no marked tendency to heal up, and as the internal opening was very large, the fistula was laid open into the rectum, and then a small piece of the foreign body (fig. 13) was found in the track. On April 14th, when last seen by me, the wound was rapidly healing. On April 30th he left London for the seaside, but before doing so he sent in



a claim for compensation for the fistula to the Railway Passengers Assurance Company, in which he was insured against accidents. His claim was allowed and paid by that Company.

CASE XIV.—Mr. H., æt. 32. Under the care of Mr. A. H. Brewer.

April 18, 1885.—On April 12th and 13th he took some turbot. On the 14th, when his bowels were being relieved, he had severe pain in the rectum. The motion in passing felt like gravel. Straining increased the pain and discomfort. From this time the pain was continuous, and he was unable to sit properly. At times the pain extended down the left thigh to the posterior and outer side of the left knee and ankle. On the 18th I saw the patient with Mr. Brewer, who had on the 17th tried to remove a bone from the rectum, but the patient could not bear the pain. Chloroform was now given, the sphincters were then forcibly stretched, and the bone (fig. 14) was then removed per anum from its puncture. The site of the puncture was on the left anterior wall of the rectum, about three-quarters of an inch above the anus. An abscess had already formed, and was opened externally with a T-shaped opening. After this the pain in the rectum and adjacent part rapidly got better.

May 1.—The opening into the rectum not having closed, and showing no tendency to do so, and the patient's habits being far from temperate, the fistula was laid open into the rectum. On May 23d he went to Margate.

November 15, 1887.—Mr. Brewer says the patient has had no rectal trouble since the fistula healed.

CASE XV.—Metropolitan Free Hospital. G. S., æt. 24, shoemaker.

May 1, 1885.—On April 15, 1885, while passing a motion, he suddenly felt a pricking pain in the rectum, and was then unable to completely relieve the bowels. The pain in the rectum was continuous up to the 17th, when he was obliged by it to give up his work. On the 18th he applied Ung. gallæ comp., which diminished the pain. On May 1st, when he came to the Hospital, he had a bone partly embedded in the right side of the rectum, about three-quarters of an inch above the anus. The bone (fig. 15) was removed per anum, and then the pain ceased. No further trouble followed the puncture.

CASE XVI.—St. Mark's Hospital. M. A. K., æt. 21, laundress.

May 6, 1880.—The pain in the rectum came on suddenly at the end of passing a motion, and has not ceased since it began.

Occasionally the pain extends from the rectum down the front of both thighs, but not in both thighs at the same time. Sitting increases the pain. On examination, a foreign body was felt in the ischio-rectal fossa. Ether was given, and the bone (fig. 16) was then removed through a T-shaped opening. The wound quickly healed. No further trouble followed.

September 22, 1887.—The patient has continued quite well up to this date.

CASE XVII.—G. W., æt. 62, dispenser.

July 22, 1886.—On July 18th, just as he had finished passing a motion, he felt a sharp violent pain in the rectum. The pain has not ceased since it commenced. On the 20th he had pain in the left posterior side of the anus when the bowels were relieved, and that pain has increased with each subsequent action of the bowels. On July 22d, when he came under my care, he had a deeply-seated abscess about the size of a chestnut on the left dorsal side of the rectum. The swelling could be distinctly felt between the finger and thumb when the index-finger was passed into the rectum. There was no discharge from the rectum, and no tear of the mucous membrane nor internal opening was detected. The abscess was opened externally with a T-shaped incision, and then two pieces of bone (fig. 17), together measuring  $1\frac{5}{16}$ ths of an inch, and about 3i. of pus escaped from the abscess. On July 23d all pain except soreness in the wound had ceased. There was no pain when the bowels were relieved.

August 12.—The part has soundly healed.

May 12, 1887.—He has remained perfectly well.

CASE XVIII.—H. G., M.D.

November 4, 1886, 7 P.M.—At 11 A.M. to-day he felt a sharp pain in the rectum when his bowels were being relieved. The pain has been continuous since it commenced. There is also a dull aching pain in the sacrum, but no pain nor numbness in either the buttocks or the thighs. Coughing increases the pain in the rectum. Yesterday he had some haddock for his breakfast.

Dr. F. de Havilland Hall gave ether. The sphincters were then moderately stretched, and the bone (fig. 18) was then removed per anum. The bone was partially embedded in the right posterior side of the rectum, about half an inch above the anus. Some Ung. cetacei (about 3ij.) was then placed in the rectum, and a pad of cotton-wool and a T bandage were applied to the anus. When he had recovered from the ether he was free from pain. He was advised to keep the bowels confined for three days.

November 8.—The puncture in the rectal wall has soundly healed. There is no pain in passing a motion, and no tenderness on digital examination.

CASE XIX.—St. Mark's Hospital. A. H., æt. 28, bookkeeper.

November 25, 1886.—On applying at the Hospital the patient had a complete fistula, the external opening being about an inch from the anus on its right posterior side, the internal opening being on the right posterior side of the rectum; about half an inch above the anus. The end of a foreign body could be felt at the internal opening. Ether was given, the sphincters were then forcibly stretched, and the bone (fig. 19) removed per anum; the external opening was also enlarged with a T-shaped incision. The patient was then admitted into the Hospital, and remained there as an in-patient for twenty-three days; during the last week or ten days Tr. iodi was injected into the external opening about every other day. When discharged the internal opening had almost closed.

August 11, 1887.—The internal opening was closed and the external opening was very small. The patient could sit without any discomfort; control perfect; and said she felt quite well. If the fistula in this case had been laid open in the usual manner, the whole of the external and the lower part of the internal sphincters would have been divided, and although the patient would have been more quickly cured of her fistula, she would have had some permanent loss of control.

CASE XX.—St. Mark's Hospital. A. B., æt. 44, map-colourer.

March 10, 1887.—The patient has a complete fistula, the external opening being on the left anterior side of the anus, about one and a half inch from it, the internal opening being on the left anterior side of the rectum, about five-eighths to three-fourths of an inch above the anus. The internal opening was large, and a foreign body could be felt in it. Ether was given, the sphincters were forcibly stretched, and the bone (fig. 20) was then removed per anum, and some Ung. hyd. subchlor. passed into the rectum. The external opening was then enlarged with a T-shaped incision, and the patient was treated as an out-patient till October 25, 1887, when she was admitted as an in-patient, because the internal opening was still unclosed and was very tender on pressure, and the delay in the healing might be due to a part of the bone being still in the fistula.

October 27.—The track of the fistula between the external and internal openings was laid open, but no foreign body was found in it.

November 11.—The patient was discharged from the ward. The wound was almost healed. It was constantly poulticed from the 29th October to the 11th November.

November 17.—The fistula is soundly healed.

From an examination of the notes of the cases above referred to it appears—

1. That this form of accident is more commonly met with after thirty-five years of age, the average age in the twenty cases being upwards of forty-two years.

2. That a bone takes from one to nine days to pass from the mouth to the rectum. Cases 2, 4, 14, 18.

3. That the pain in the rectum comes on suddenly while the motion is being passed.

4. That there is constant pain or discomfort in the rectum, and sometimes also in the adjacent parts, from the time of puncture until the foreign body has been removed.

5. That the site of the puncture is within the last inch or three-quarters of an inch of the rectum.

6. That when an abscess follows the puncture, it begins to form within two or three days of the puncture. Cases 11, 13, 14, 17.

7. That when the case is seen early and the bone promptly removed, no ill effects follow the puncture. Cases 2 and 18.

8. That when a fistula has formed, the patient may, unless the internal opening is large, be cured by making only a free external opening. Cases 4, 5, 8, 17.

9. That when it is necessary to lay open the fistula, the wound made—the foreign body having been removed—heals much more rapidly than the wound does in non-traumatic cases of fistula.

It is important to a candidate for life assurance who has had fistula that the cause should be ascertained. If of traumatic origin, no increase should be made in the rate of premium because of such a fistula. It is only within recent years, so far as I am aware, that accident insurance companies have recognised their liability for the results caused by foreign bodies accidentally swallowed. Case 13.

When a case of foreign body in the rectum is seen soon after the puncture has taken place, it may be successfully treated in the following manner:—

An anæsthetic should be given, then the sphincters should be forcibly stretched short of tearing them (the largest bone I have yet seen measured  $1\frac{5}{16}$ th of an inch—Case 17); the bone or the foreign body should then be removed, either from the rectum or

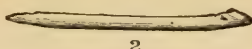


by an external incision. After the foreign body has been removed about ʒij. of Ung. cetacei or other simple ointment should be introduced into the rectum. The bowels should then be kept confined for three or four days, when they should be relieved by an enema of olive-oil, not by aperients. Should an abscess begin to form, it cannot be opened too soon.

In opening an ischio-rectal abscess, or in converting a blind internal fistula into a complete fistula, the form of opening now always adopted by me is the T-shaped. The horizontal part passing completely across the induration of the abscess, or blind internal fistula, from side to side, and parallel to the anus, the perpendicular part of the opening starting from the centre of the first incision, and extending outwards to just beyond the induration in that direction. The opening thus made gives a very free exit for the discharge; it takes off nearly all the tension, and closes slowly. In making this form of opening it is seldom necessary to ligature a bleeding vessel. The hæmorrhage can always be arrested by carefully filling the wound with dry cotton-wool, and then firmly applying an outside pad of cotton-wool and a T bandage. About four or six hours after the opening has been made the patient should sit in a warm bath, so that all the cotton-wool, excepting that placed in the wound, may come away. After the bath the part should be constantly poulticed until the opening has healed, or until it is clear that a fistula has resulted. The cotton-wool placed in the wound at the time of making the opening should not be removed, but be allowed to come away on the poultices. This it usually will do in from two to four days. The bowels should be kept confined for three or four days, and then, unless they act naturally, should be relieved, not by an aperient, but by an enema of olive-oil. One to two ounces of olive-oil injected at bedtime is frequently sufficient to cause the bowels to act freely the next day. The oil should be allowed to remain in the rectum as long as the patient can retain it.



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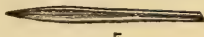
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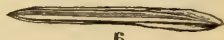
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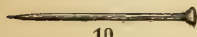
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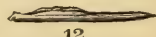
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The numbers refer to the cases.



NOTES OF  
A CASE OF ANEURYSM OF THE AORTA,  
TREATED AFTER TUFNELL'S PLAN.

BY  
PAULIN MARTIN.

In June 1881 a gentleman called on me and asked me to examine his chest. On stripping him, a bulging of the ribs above the right nipple was visible, and a strong heaving pulsation. There was no bruit audible and the heart was healthy, but the apex was lower than normal. He was unable to account for the pulsation, which had been only discovered the day previously, whilst being examined for a life insurance; of its existence before he was unaware. His age was forty. He had never had syphilis. Had led a very active, energetic life, and had regularly hunted. He was about to be married, and therefore no special treatment was then recommended, but he was advised to lead as quiet a life as possible. After his marriage he suffered excruciating pains very frequently over the pulsation; but he still rode and occasionally hunted, but always found he was worse afterwards. I saw but little of him during this year, until April 1882; he was suffering very much from pain and palpitation; he had consulted Sir William Jenner, Dr. W. Wadham, and Dr. Saunders. These physicians agreed that he had a large sacculated aneurysm of the ascending aorta, as large as a cocoa-nut. They all advised his leading a sedentary life, avoiding all excitement and walking only on the level ground. Their opinions were most unfavourable and discouraging. The patient felt himself to be—

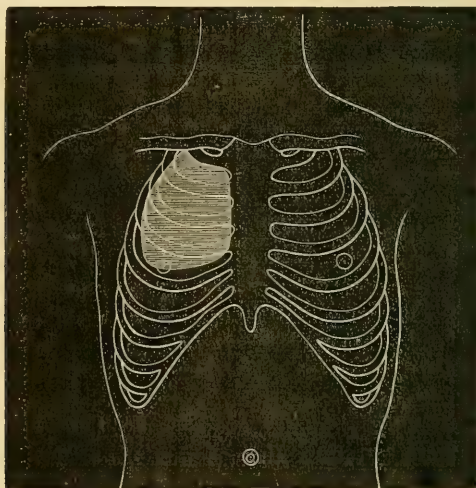
“ . . . Incurable—  
Not to be helped . . .  
. . . As 'twere a man assured of an  
Uncertain life and sure death.”<sup>1</sup>

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<sup>1</sup> All's Well that Ends Well, Act ii. Scene 3.



Dr. V. Harris's paper on Tuffnell's plan of treatment for aneurysms of the aorta had appeared in the Bartholomew's Hospital Reports for 1881, and strongly inclined me to adopt this method with this case. The inconvenience, tedium, and semi-starvation it entailed were laid before the patient, who at once made up his mind to commence the treatment. He weighed 150 lbs. before commencing; his pulse was usually 96, and frequently 120. He was suffering daily from excruciating pains in his chest and dreadful palpitation. The area of pulsation was carefully taken, which, commencing from the axilla, extended along the inferior margin of the first rib to the sternum, and downwards close to the sternum to the fourth rib,



Area of Pulsation Shaded.—April 9, 1882.

and along its lower margin to the axilla. The shaded portion in the diagram for April represents the area of pulsation.

April 9, 1882.—He was placed on a large water-bed and all movement prohibited. My notes contain particulars of each day's pulse, of the diet, &c., during the seven months the treatment lasted, and I have extracted a day or two from each month. During April his diet was limited to 18 oz. solids, and 8 oz. fluids. During other months it was more restricted. It was varied considerably. Contrary to his usual taste, he now preferred soft food; but as this counted as part fluid, it had to be restricted. About 18 oz. solids and 6 oz. fluids seemed to answer best. At first he tried dividing his fluids into several small quantities, and took—

2 oz. cocoa . . . . .	Breakfast.
2 oz. beer or wine . . . . .	Luncheon.
2 oz. tea . . . . .	Afternoon.
1 or 2 oz. tea or wine . . . . .	Supper.

But the small quantities were tantalising, and he usually took the whole allowance at one time.

I subjoin two days specimens of his dietary:—

OUNCES.	DIET.	SOLIDS.	FLUIDS.
BREAKFAST, 8.30 A.M.			
5	Milky porridge . . . . . counting as	3	2
DINNER, 1 P.M.			
3	Roast mutton . . . . . "	3	...
3	Bread and vegetables . . . . . "	3	...
2	Pudding . . . . . "	1	1
TEA, 5 P.M.			
1	Bread and butter . . . . . "	1	...
4	Tea . . . . . "	...	4
SUPPER, 8 P.M.			
3	Meat, fowl, or fish . . . . . "	3	...
3	Toast or bread and butter . . . . . "	3	...
Totals . 24		17	7
BREAKFAST, 8.30 A.M.			
4	Porridge . . . . . counting as	2	2
2	Cold bacon . . . . . "	2	...
1	Toast . . . . . "	1	...
DINNER, 1.30 P.M.			
4	Mutton chop . . . . . "	4	..
3	Beans and bread . . . . . "	3	...
TEA, 4.30 P.M.			
3½	Strong tea . . . . . "	...	3½
SUPPER, 8 P.M.			
3	Roast beef . . . . . "	3	...
2	Bread . . . . . "	2	...
Totals . 22½		17	5½

During the treatment he suffered fearfully from thirst, and complained of a dry, parched feeling and a cracked tongue. At first he used to smoke a long pipe, but it caused more dryness

of the mouth, although he fancied it was useful to allay hunger. Stimulants were scarcely used during the treatment; they seemed to cause thirst and increase palpitation; ale and claret were the usual forms. On the whole, sleep was good, but occasionally disturbed by palpitation. The tea was made strong, without milk or sugar, but with a slice of lemon in it, as it was found to be by far the most thirst-quenching thus taken. Grapes, about six or eight a day, were allowed in addition, but all other fruit produced thirst. Once a week an extra 3-oz. cup of tea was allowed. But on the whole this patient exercised great firmness and determination with himself, and therefore bore the restricted diet with patience, although his sufferings were really considerable. Some days there was great depression of spirit, but usually he was very cheerful, and hopeful about the treatment. Very few aperients were needed, except at the commencement, when constipation was the rule; it was relieved by 5 grains of blue-pill and 5 of compound colocynth, or occasionally an enema of warm water. The only drugs given were granules of digitaline for a short time, and lead and opium, which increased the constipation and were soon abandoned, caffeine for the palpitation, and later on ergotine; but no drugs seemed to do him any good. During the whole period his urine was usually offensive, but free from albumen, and about 20 oz. per diem. This used to puzzle him, as he was taking scarcely 6 oz. fluids. During the month of April his pulse was on an average 90. He suffered very severe pains in his chest daily; these were much relieved by ice.

April 24.—The pulsation has already a decidedly different character, as if a thick piece of leather were interposed between the aneurysm and the finger. He sleeps well, but suffers from constipation. He is not moved out of bed for anything.

May 22.—Very patiently continues treatment. Pulsation unchanged, but there is very much less pain. Diet this month, 16 oz. solids, 8 oz. fluids. Pulse varied between 75 and 95.

June 3.—Visited by Dr. Wadham. Pulsation unchanged. Diet, 19 oz. solids, 5 oz. fluids. Pulse 75 to 95.

July 6.—Continues treatment. Pulsation seems less heaving, but area unchanged. Diet, 20 oz. solids,  $5\frac{1}{2}$  oz. fluids. Pulse 66 and 82. His wife having been confined, he has been carried into her room to see her.

July 25.—Diet, 15 oz. solids,  $5\frac{1}{2}$  oz. fluids. There is a slight cessation of pulsation in upper area. He is allowed to be lifted off his bed on to a sofa.

August 30.—Diet, 13 oz. solids,  $5\frac{1}{2}$  oz. fluids. Pulse 65 and 75. Pulsation decidedly less; at times it cannot be felt between first and second ribs.

September 30.—Diet varied this month between 15, 10, and 18 oz. solids, but only  $5\frac{1}{2}$  oz. fluids. He has now tried the treatment nearly six months. The pulsation is decidedly much reduced. The upper area runs along the lower edge of first rib. The lower area along the upper edge of the fourth rib. The outer margin is quite one inch distant from axilla. The inner margin is one inch distant from the sternum. It is clear that the principal decrease has occurred in the outer and inner margins; whilst the upper and lower borders seem little changed. He is now allowed to be carried into his garden and sit up in a wheeled chair, but he still continues the restricted diet.

October 1 (25th week).—Visited by Dr. Wadham, who considered there was a thick deposit in the sac. He advised the daily application of Leiter's tubes with iced water for one hour; this caused considerable pain; it was fancied that it was useful. Diet this month, 22 oz. solids, 8 oz. fluids. The pulsation is felt strongly between second and third ribs. He weighs 124 lbs., and has therefore lost 26 lbs. in weight during the treatment.

October 29.—He went up to London, where he remained till December 20th. He was carried to the station and forbidden to walk. He was visited by Mr. Prescott Hewett.

December 21.—He is now allowed to walk on the level and attend to his usual occupation, but he is carried upstairs. The pulsation area appears decidedly contracting, being specially felt between second and third ribs. He eats and drinks as much as he likes, but much less than any ordinary man. He has no pain whatever.

July 29, 1883.—The pulsation begins about one inch away from the sternum, between the second and third ribs, and extends outwardly between these ribs only as far as an imaginary line drawn from centre of clavicle to nipple. There is no pulsation below third rib, none in axilla; between first and second rib an indistinct pulsation is felt, which is probably communicated.

January 11, 1884.—Pulsation same. He now walks up the staircase.

February 1885.—Much the same.

November 1885.—Feels very well. Pulsation unchanged.

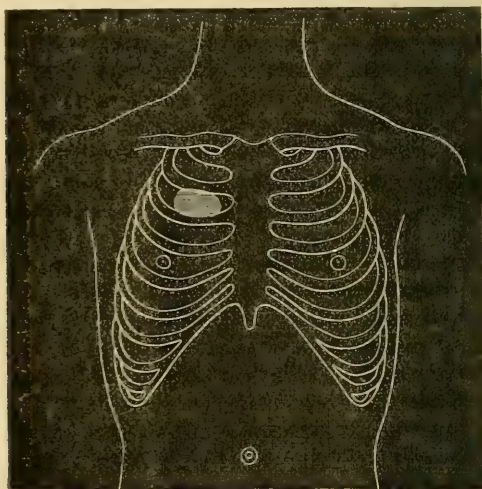
July 1886.—Very well. There is now no visible pulsation when he stands up or lies down, as heretofore there has been. To look at the chest, one would not imagine there was anything wrong. The bulging has disappeared, and the chest-wall is flat. He has occasionally slight pain.

November 28, 1886.—No visible pulsation; no bulging. Pulsation is only felt between second and third ribs. He is



taking far more exercise than he should. He mounts high dogcarts; has been thrown out of a phaeton and escaped unhurt, although his companion was much shaken, and has never since recovered entirely.

July 15, 1887.—Pulsation is only felt between second and third ribs, reaching outwardly as far as an imaginary line from the centre of the clavicle to the nipple. (See diagram for July



Area of Pulsation Shaded.—July 15, 1887.

1887.) There is no bruit audible either over the aneurysm or at the heart. Pulse normally about 86. He has had much troublesome cough during the cold spring this year, attended by expectoration somewhat rusty coloured. At the back between the spine of scapula and the seventh rib there is an area of dulness, the lung being evidently compressed by the aneurysmal sac. He is quite well in health and spirits. He carries on a large business, requiring his constant attention. He rides on a low cob and drives in a low cart. He can walk five miles easily. His weight is now 10 stone 10 lbs.

I am much indebted to this gentleman's wife for her clever and copious notes, which, in many particulars about the diet, &c., have much assisted me.

# CASES TO ILLUSTRATE VARIETIES OF MUSCULAR ATROPHY.

BY

J. A. ORMEROD, M.D.

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The following cases are intended to illustrate the subject of paralysis associated with muscular atrophy—"atrophic paralysis," as it has been shortly called. The term is not meant to include wasting from any cause whatever, as, for instance, from general malnutrition or from disuse, but only cases in which the paralysis and atrophy are essentially and inseparably combined. Paralysis may result from lesion of the motor tract at any level, but it is associated with muscular atrophy only when this lesion is situated in or below the trophic centres of the muscle, viz., the anterior cornual ganglion cells of the cord. A still further limitation may be made if we exclude, as is usually done from the class "muscular atrophy," cases of well-defined neuritis, simple or multiple, and cases of diffuse myelitis and of spinal meningitis and toxic paralysis, albeit in each of these muscular atrophy may be a prominent symptom. There will then remain to be dealt with disease of the anterior cornual cells, acute, subacute, or chronic; primary disease of the muscle substance; and a class of cases (as yet imperfectly known) probably but not certainly neuritic. Much has been done lately towards the classification of such forms of muscular atrophy,<sup>1</sup> and especially of the chronic and progressive forms, partly by the description of various clinical types, partly by the attempt, more or less successful, to classify those types according to the position of the primary lesion, whether spinal, neural, or muscular. The present cases being drawn solely from my out-patient practice, illustrate only the clinical side of the question.

<sup>1</sup> See Charcot, *Revision nosographique des Atrophies musculaires progressives*. *Progrès Médical*, 1885, No. 10; and Howard Tooth, *Recent Observations on Progressive Muscular Atrophy*. *Brain*, July 1887.

*Acute anterior poliomyelitis* is such a common disease of children, that it is needless to describe it, or to give cases of it at that age. The following case may be interesting as occurring in an adult, and as corresponding, with respect to the distribution of the paralysis, very nearly to the "upper-arm" type of paralysis described by Erb. The muscles principally affected were those supplied by the fifth and sixth cervical roots, viz., deltoid, flexors of fore-arm, part of pectoralis major, supinator longus (incompletely), and spinati; but the rhomboids and part of the trapezius (supplied from a higher level) and also the triceps were affected in less degree. I admit that a neuritis strictly limited to the anterior nerve-roots might have produced the same symptoms; but I think such a limitation would be unlikely, and that therefore, had there been neuritis, sensory symptoms would have been present at the onset. But this was not so.

#### CASE I.

*Atrophic Paralysis, chiefly of the Deltoid, Flexors of Fore-arm, and Spinati (R. Side only), in a Young Adult—Complete Absence of Sensory Symptoms—Acute Onset—Recovery of the Less Affected Muscles.*

John H., æt. 19, a groom.

March 23, 1887.—Has paralysis, with wasting of the muscles of R. upper arm and shoulder-joint. The paralysis came on quite suddenly in the night of September 2, 1886. He went to bed well (except for a slight headache, from which he often suffers). There was no pain, no loss of feeling, no affection of speech, nor paralysis of any other limb. The hand was not affected, only the shoulder and upper arm, as now. He does not know how long the wasting took to develop.

Nine or ten weeks previously he fell on this shoulder. With this accident he seems inclined to connect the paralysis, but he says himself that the arm was not hurt at the time, and no symptoms showed themselves in the interval.

His statements as to the onset of the disease were fully confirmed to me by his medical man, Dr. Walker of Crick.

There is marked wasting of R. supra- and infra-spinatus muscles; wasting of deltoid and clavicular part of pectoralis major; R. biceps is small and flabby as compared with L.; brachialis anticus?. All the above muscles appear to be paralysed, the flexors of the elbow perhaps not completely. R. triceps small and weak as compared with L.; supinator longus

also weak. In addition, the contour of the neck from behind looks as if there was some wasting of the upper middle part of the trapezius (R.); and there is indication of paralysis of the R. rhomboids, in that the lower angle of the scapula is rotated outwards, and its vertebral edge is farther from the spine than that of the L.

Electrical examination shows well-marked R.D. in deltoid, biceps, and spinati, partial R.D. in rhomboids and the above-mentioned fibres of the trapezius, diminished farado-contraction in R. triceps and supinator longus, and (?) in extensor of fingers. (Details below.<sup>1</sup>)

No affection of sensation, whether to touch, pain, or temperature, can be detected. Pupils moderate size; act normally to light.

Although rather pale, he seems a perfectly healthy man, and there appears to be no predisposition to nervous disease.

He was electrified regularly, sometimes with the galvanic current, sometimes with the dynamo. By March 28th the biceps had improved in size and strength; by May 9th he could flex the fore-arm easily. By July 27th, although he considered that he had steadily improved in other respects, yet the deltoid remained quite paralysed. Once in April he complained of some "jumping pain" about the insertion of the R. deltoid, but it seemed not to be definitely connected with his paralysis.

Of *subacute anterior poliomyelitis*, a rare disease, and difficult, I should imagine, to diagnose from some forms of multiple neuritis, I have no instances to offer.

*Chronic anterior poliomyelitis* is the name applied by some

<sup>1</sup> <i>Deltoid</i> —	To faradism.	To galvanism.
L. (sound) . . . . .	Normal . . . . .	KSZ > ASZ normal twitch at 9 m.a.
R. (paralysed) . . . . .	No action . . . . .	ASZ > KSZ slow long twitch } at 15 m.a. and sometimes KST
<i>Biceps</i> —		
L. . . . .	Normal . . . . .	KSZ at 3.5 m.a. } normal twitch. ASZ 7
R. . . . .	No action . . . . .	KSZ = ASZ at 9 m.a. slow.
<i>Supra-spinatus</i> —		
L. . . . .	Normal . . . . .	KSZ...ASo at 10 m.a.
R. . . . .	Absent . . . . .	KSZ...ASo at 15 m.a. slow.
<i>Infra-spinatus</i> —		
L. . . . .	Normal . . . . .	KSZ...ASo at 10 m.a.
R. . . . .	Absent . . . . .	ASZ > KSz at 10 m.a. slight and sluggish ?.
<i>Trapezius</i> —		
R. . . . .	Less than L. . . . .	KSZ > ASZ, but slow.
<i>Rhomboids</i>	R. less than L. . . . .	Not tried.
<i>Triceps</i>		
<i>Supinator longus</i>		
<i>Through Erb's point</i> (R.), little or no action to faradisation.		



authors to the disease just mentioned, while others employ it as the synonym of *progressive muscular atrophy*, thereby asserting the spinal origin of this malady. And, indeed, till quite lately, opinions have inclined this way, so that progressive muscular atrophy was considered, in a general sort of way, to be a disease of the anterior cornual cells. But clinical observations seem to show that under this heading have been comprised distinct types of disease, which may also differ in their morbid anatomy. The first variety, indeed, the existence of which was established by Charcot, viz., amyotrophic lateral sclerosis, was also shown by him to be essentially spinal. But other forms have since been differentiated, which appear to be primarily diseases of muscle, or some, perhaps, of nerves. I will briefly enumerate the characteristics of some types of progressive muscular atrophy, giving examples where I can.

The main features of the original type, known as that of Aran and Duchenne, are as follows:—

Onset in early life, course slow; commences usually in small muscles of hands; spreads thence first in upper limbs, picking out muscles or parts of muscles irregularly, and becoming slowly generalised. Fibrillary twitchings are present. Paralysis proceeds *pari passu* with the muscular wasting, and similarly faradic contractility is extinguished very gradually; reaction of degeneration appears late.<sup>1</sup>

There are no spastic phenomena.

The morbid anatomy consists in degeneration of the anterior cornual cells.

I have no unmixed examples of this disease to give. The case which follows is of this nature, so far as concerns the atrophy of the limbs, but began with paralysis and atrophy of the tongue. Duchenne indeed denied that the combination of "glosso-labio-laryngeal paralysis" with progressive muscular atrophy of the limbs was more than a chance coincidence of two distinct diseases; but it is now generally admitted that both are due to the same degeneration of motor cells in the nuclei of the bulb and in the spinal cord respectively. Cases commencing in the bulbar nuclei and spreading to the anterior columns of the cord are described by Leyden under the name of "progressive bulbar paralysis."<sup>2</sup> Such is the following.

<sup>1</sup> It is said, I believe by Erb, that the non-appearance of R.D. may be simply due to the fact that it is masked by the normal contraction of adjacent healthy muscle, inasmuch as the degeneration of the muscle proceeds piecemeal.

<sup>2</sup> On some relations of this disease to amyotrophic lateral sclerosis, see *Brain*, No. 34, pp. 248-249.

CASE II.

*Progressive Bulbar Paralysis, beginning Suddenly in the Tongue, spreading in Three Months to Hands—Wasting of Tongue and Hand-Muscles—Fibrillar Twitchings of Deltoid—No Reaction of Degeneration—Slow Progress while under Observation (Ten Months).*

Joseph W., æt. 44, gasfitter.

September 9, 1884.—One afternoon in January last was taken with giddiness, pain in the head, vomiting, and diarrhœa. This continued till the evening of the following day. He had to stay away from work for a month. During this time (whether suddenly or not is not stated) the speech became thick as now. In the following April he noticed wasting of the limbs and loss of power, principally in the R. hand. Five weeks ago he had another attack of diarrhœa, with dulness and heavy feeling in the head. Occasional difficulty in swallowing.

*Previous history.*—Has had rheumatic fever three times, the last attack twelve years ago, and “rheumatic gout” frequently since. No history of syphilis. No mental symptoms at any time. No paralysis in his family.

The speech is thick and almost unintelligible; the tongue much wasted, and can scarcely be protruded from the mouth. The face expressionless. He cannot whistle well, but there appears to be no definite facial paralysis. Motion of palate, both voluntary and reflex, normal. Corneæ very opaque (as if from interstitial keratitis); they have been so from birth. Motion of eyeballs normal.

Wasting of R. first dorsal interosseous muscle; R. thumb-ball, muscles of fore-arm, upper arm, and deltoid small but not wasted. Muscles of L. hand and arm also small, but less so than R. Some wasting of the neck. Chest moves little during inspiration. Tendon-reactions normal in upper limbs, and little, if at all, increased at the knees. No ankle-clonus. Occasional fibrillar twitchings of the muscles of the fore-arms and deltoid.

Electrically the muscles act to faradism, but the most wasted muscle, viz., R. first dorsal interosseous, requires a stronger current than others; and the same holds for galvanism. No alteration of polar formula.

There was no affection of sensation in any part. Heart normal. Urine free from albumen and sugar. He remained under my care till April 1885, and during this period got slowly worse.

He got weaker, and the wasting involved the L. hand and more muscles in the R.; saliva began to run from the mouth; his breath became short on exertion; he had cough, with phlegm that was difficult to get up. The only improvement was in the condition of the corneæ, which cleared up considerably. Owing to the difficulty with his tongue and an irritable condition with his fauces, I could not examine the larynx satisfactorily.

He was admitted as in-patient, care of Dr. Ramskill, in April 1885, and remained in the Hospital till July, but the disease still continued slowly to progress.

*Amyotrophic lateral sclerosis* begins with weakness of the upper limbs; wasting soon follows. The wasting attacks the hand-muscles first, and spreads rapidly up the limb, involving whole muscles and groups of muscles. Twitchings of muscle-fibres and muscle-bundles are present. Alteration in electrical reaction is usually demonstrable, at least in the more deeply affected muscles.<sup>1</sup> But the chief distinguishing feature is the presence of spastic phenomena, viz., increased tendon-reactions, ankle-clonus, and even rigidity. Along with these symptoms appears paraplegia, at first without wasting of the legs. Bulbar paralysis follows later, constituting the last stage. The disease runs a rapid course, usually terminating in three or four years. The muscular atrophy is due to disease of the anterior cornual cells, the spastic phenomena to lateral sclerosis. But the disease probably affects a more extensive area; for the cells in the motor area of the brain and the pyramidal tracts within the brain, have been involved in some instances,<sup>2</sup> so that the whole motor tract, from cerebral cortex to peripheral nerve and muscle, may be affected by this disease.

### CASE III.

*Weakness and Wasting of R. Hand—L. Hand subsequently Affected, and appearance of Spastic Phenomena and of Weakness in the Legs.*

Joseph B., æt. 50, traveller.

July 10, 1880.—Complains of loss of power in R. hand, of two or three months' duration. "Cramps" in both the hands at

<sup>1</sup> Authorities are somewhat at variance about the electrical reactions. See *Brain*, No. 34, p. 251.

<sup>2</sup> Kahler and Pick, *Prager Vierteljahrschrift*, 1879. Kojewnikoff, *Archiv de Physiol.*, No. 18; Charcot and Marie, *Ibid.*, Nos. 28 and 29. Koshewnikow, *Neurol. Centralblatt*, 1886, p. 565.

night. So far he has noticed no other symptom. Knows of no cause for his illness, unless it be worry in business some twelve months ago.

Much wasting of ball of R. thumb and of first dorsal interosseous muscle R.; muscles of R. fore-arm flabby. Fibrillar twitching of R. supinator longus. Tendon-reactions in upper limbs excessive (R. > L.); at knees, little if any exaggeration of tendon reaction. No ankle-clonus. Tongue furred, tremulous, but not wasted.

July 28.—Tendon-reactions distinctly exaggerated at knees.

September 23.—Has noticed weakness in the legs; they shake when he gets out of bed. Wasting of muscle on extensor surface of R. fore-arm.

October 20.—Slight ankle-clonus on both sides; complains of weakness L. thumb.

December 1.—There is a certain amount of resistance to passive movement both at the knees and at the L. elbow, and still more in the L. hand, when I turn it from the position of pronation to semi-supination. This manœuvre produces a sustained clonus in the pronators, quite analogous to ankle-clonus. Some twitching in the muscles of the lower limbs, but no wasting here.

January 17, 1881.—Complains for the first time of stiffness at the knees.

May 11.—Decided stiffness at the knees. Though the tendon-reactions are very excessive, there is to-day no ankle-clonus. The wasting is now apparent in the intrinsic muscles of *both* hands and in the fore-arms.

As yet no bulbar symptoms have been observed.

#### CASE IV.

*Amyotrophic Lateral Sclerosis—History of a somewhat Acute Onset—Early Affection of Tongue—Tongue Wasted—R. Hand Swollen and Congested—Wasting R. Upper Limb spreading to L. during Period of Observation (a Month)—Increased Tendon-Reactions in Lower Limbs.*

Thos. H. W., æt. 62, letter-carrier.

August 4, 1885.—Complains of paralysis in R. hand and arm, slight weakness of the L. hand, and paralysis of the tongue.

Was well till the middle of November last, except for bronchitis; he then fell from an omnibus, striking his loins. He dates the present illness from this accident. The day after he



felt a "cramp" in R. hand, and next he began to lose power in it. His speech became affected within a week. Wasting of R. arm was noticed about Christmas-time. L. hand has been weak about three months. Has had occasional pins and needles in the L. hand, but no other sensory symptoms except this.

*Present condition.*—Speech is thick, nasal, and somewhat drawling, the consonants badly pronounced. Tongue tremulous, wasted, cannot be protruded far. Soft palate acts during phonation. Cannot whistle. Says he often chokes in swallowing.

Nothing abnormal about eyes or pupils.

Condition of limbs: R. arm and hand flaccid and paralysed. R. hand remarkably swollen, congested, blue, and cold to touch; finger-nails small and separating into scales. (At first he stated that this swollen and blue condition of the hand had only existed since Christmas, but afterwards he said that it had been for many years bigger than the L., and that even as a boy he noticed it to be remarkably cold.) Muscles of R. upper limb: thumb-ball and interossei wasted, though not extremely; fore-arm much wasted, muscles on both the flexor and extensor aspect (except supinator longus) seem almost gone; upper arm and deltoid wasted, though less than the fore-arm. In L. upper limb much less wasting, but still some flattening of thumb-ball, and a certain amount of wasting in the interossei, and in the brachialis anticus. L. deltoid smaller than it should be. Much twitching of the R. rhomboid muscles. Tendon-reactions absent at R. wrist, lively at R. elbow and at L. wrist and elbow.

Electrical examination of the upper limbs showed diminution or even absence of *faradic* contractility in muscles of R. hand and fore-arm; absence of *galvanic* contractility in R. thumb muscles and those on flexor aspect of R. fore-arm; diminished contractility with alteration of polar formula in most of other R. muscles; alteration of polar formula in some of L. muscles. The character of the muscle-twitch was normal in all but one muscle (R. biceps).<sup>1</sup>

Lower limbs thin, but this he says they always are. Certainly, however, the muscles on the front of the thighs are small; more-

<sup>1</sup> *Faradism*—

L. thumb-muscles, interossei (?),	and muscles of fore-arm act.
R. " "	no action to strong current.
L. biceps acts.	
R. " "	acts less strong'y.
L. triceps and deltoid act.	
R. " "	not.
L. supra-spinatus	doubtful.
R. " "	no action.
L. infra-spinatus acts.	
R. " "	doubtful.

over, there is twitching of the R. internal and external vastus. These muscles are very irritable to percussion. Patellar tendon-reactions much exaggerated, especially L. No ankle-clonus. No rigidity. No peculiarity of gait.

Sphincters act normally.

He has a troublesome cough, and sleeps badly at night.

He was made an in-patient. He was given quinine and medicine for his cough. In addition, the constant current was employed to the affected muscles.

He remained under my observation for a month only. Even in this short time he got distinctly worse. His L. hand felt more numb, and became weaker and more wasted. Much twitching was noticed in the shoulder-muscles, in the R. biceps, and in what remained of the R. deltoid. His swallowing power was bad, and his speech became almost unintelligible.

# CASE V.

*Amyotrophic Lateral Sclerosis, said to have Originated in an Accident, and Running a Slow Course—No Definite Bulbar Symptoms after nearly Four Years—L. Side more Affected than R.*

John M., æt. 28, formerly in the army.

July 20, 1886.—A tall, healthy-looking man, complaining of

## Galvanism—

			Elements.	M.A.
Muscles of fore-arm.	L. thumb-muscles . . .	ASZ > KSZ at . . .	12	about 6?
	R. . . . .	No action . . . . .	Strongest current.	
	L. flexors . . . . .	KSZ slightly > ASZ . . .	14	7
	R. " . . . .	No action . . . . .	18	15
	L. extensors . . . . .	KSZ . . . . .	14	7
		ASZ . . . . .	16	...
	R. " . . . .	KSZ = ASZ . . . . .	18	12
	L. supinator longus . . .	ASZ slightly > KSZ . . .	14	7
	R. " . . . .	ASZ . . . . .	16	10
		KSZ . . . . .	18	15
	L. biceps . . . . .	KSZ > ASz . . . . .	14	5
	R. " . . . .	KSz = ASz . . . . .	14	5
		(somewhat slow contraction)		
		KSZ = ASZ . . . . .	...	10
	L. deltoid . . . . .	KSZ . . . . .	14	9

## Faradisation of Nerve-Trunks—

Ulnar at elbow.	L. normal action.	R. no action.
Median at elbow.	L. normal.	R. normal (flexion thumb and fingers).
Musculo-spiral.	L. slight action.	R. slight action of extension in thumb.

weakness of the hands, principally the L. hand, and of some weakness of the L. leg.

On June 17, 1883, while at Aldershot, he struck his head while jumping out of a door, and fell backwards, striking the L. shoulder in his fall. He was stunned for ten minutes, and on coming to, found he had lost power in all his limbs, and felt a numbness all over him. No interference with micturition or defæcation. In a fortnight, however, he could walk again, and in five months' time he went to work as a labourer. He had to give this up in ten days, as it caused a relapse. He then improved gradually till last winter (1886-87), during which he got worse, so that he could not even button his clothes without great trouble. He entered the Sussex County Hospital, where he again improved, and where he has remained till four weeks ago.

Up to the time of the accident he was perfectly well. In 1882 he had venereal disease, chancre and bubo, but no secondaries. Four years ago he had a pleurisy, lasting four months.

The hands are thin, particularly in the first interosseous space, and the L. more so than the R. Grasp of R. hand very feeble, and of L. almost nil; the grasp seems diminished out of proportion to the loss of muscle. General thinning of the fore-arms. Fascicular twitching of muscle observed chiefly in the biceps and deltoid. Tendon-reactions at both wrists lively, and in the biceps remarkably lively.

Lower limbs muscular. At present no muscular twitchings can be seen, but he feels them sometimes in the L. leg. The L. leg shakes, he says, and sometimes gives way. Tendon-reactions at knees, L. exaggerated, and greater than R. Ankle-clonus present on L. side, not on R. No rigidity. Gait quite natural.

Speech natural. Tongue quite normal. On being asked, says he sometimes feels while drinking a choking sensation on L. side of throat, but it appears to be slight. Movements of eyes normal; pupils normal.

Has pain just above L. scapula, and pain in L. neck when he turns his head sharply. I can find nothing locally to account for this.

Electrical examination of the upper limbs showed that all the muscles acted to faradism, although the first dorsal inter-ossei, the only really wasted muscles, required a considerably stronger current than my own, and that with galvanism normal contraction was obtained, except that the polar formula was

slightly altered in some of the L. muscles. The biceps, especially on the R. side, was remarkably irritable.<sup>1</sup>

He was treated as an out-patient till November, being electrified regularly either with the dynamo or the galvanic current, and from day to day no particular change was noticed.

He was then admitted under the care of Dr. Ramskill, who kindly permits me to utilise the notes taken in the Hospital. It would appear from these that the muscular atrophy had spread since he first became an out-patient; for there was (in November) considerable wasting of the interossei of both hands; some wasting of the fore-arms and front of arms; of the lower part of the trapezii, L. serratus magnus, L. supra- and infra-

1 Muscles.	Action to	
	Faradism.	Galvanism.
<i>First dorsal inteross.—</i>		
R. . . .	Diminished action	KSZ > ASZ at 10 m.a.
L. . . .	" "	KSZ = or < ASZ at 10 m.a.
<i>Thenar and hypo- thenar muscles—</i>		
R. . . .	Moderate .	{ Not obtained, possibly owing to high resistance. Forty elements gave only 5 m.a.
L. . . .	Rather less .	
<i>Flexor surface of fore- arms—</i>		
R. . . .	Moderate .	KSZ > slightly than ASZ at 11 m.a.
L. . . .	" "	" " "
<i>Extensor surface of fore-arms—</i>		
R. . . .	Moderate .	KSZ > ASZ at 8 m.a.
L. . . .	Rather less	KSZ > ASZ at 8 m.a. (less difference).
<i>Biceps—</i>		
R. . . .	Increased	{ KSZ KOZ sometimes } at 1 m.a. ASZ at 3 m.a.
L. . . .	Good .	
		KSZ at 2 m.a. ASZ (doubtful) at 3 m.a.
<i>Deltoid—</i>		
R. . . .	Moderate .	KSZ > ASZ at 15 m.a.
L. . . .	" "	KSZ = or < ASZ at 10 m.a.
<i>Trapezius—</i>		
R. . . .	Normal .	Not examined.
L. . . .	" "	" "
<i>Triceps—</i>		
R. . . .	Increased .	Not examined.
L. . . .	Good .	" "

It may be added here that the muscles of the L. arm and fore-arm were generally smaller than the R., though scarcely to be called wasted. With this the diminution in farado-contractility corresponded on the whole.

All these muscles were re-examined by me in October, and almost identical results obtained; the galvanic reactions of the triceps and of the thenar and hypo-thenar muscles were found to be normal.



spinatus. The tendon-reactions in the L. upper limb, which had been excessive, had disappeared. They were still excessive in the L. lower limb, and there was here slight rigidity to passive movement.

By January 1887 the loss of power had increased, especially in the L. arm.

By April 1887, when he left the Hospital, the paralysis had again become stationary.

An electrical examination made about this date by Dr. Wilson showed very little change in the irritability of the muscles, except that in the L. thenar and hypothenar muscles a distinctly sluggish reaction to galvanism was noted.

May 24, 1887 (in the out-patient room).—Considerable change for the worse. He cannot lift the L. arm at all; the L. hand is cold and congested. He lifts the R. arm with difficulty. Has had "rheumatic" pains in head and neck. Can still walk fairly well. Still absence of bulbar symptoms.

Charcot and Marie<sup>1</sup> in France, and Dr. Howard Tooth<sup>2</sup> in this country, have described independently, and almost at the same time, a form of muscular atrophy which the latter author calls the *peroneal type*. Unlike the two preceding forms, it commences in the legs (peroneal or anterior tibial groups of muscles), spreads to the thighs, and later to the hands and arms. Fibrillary twitchings have been seen, but are not invariable. Reaction of degeneration has been observed. There is frequently a family predisposition, several members of the same stock being attacked. The morbid anatomy is uncertain; the authors appear to regard it as probably a disease of the peripheral nerves. In one case of mine, published in Dr. Tooth's paper, there was no heredity. In some others published by me in *Brain*,<sup>3</sup> and quoted by Charcot and Marie, two at least of the same family were affected.

The following case deserves consideration in this connection. The history of pain at the onset, the affection of sensation, which was certainly present, though not an obtrusive symptom, and the very distinct extensor paralysis, certainly suggested a multiple alcoholic neuritis. But the gradual progress of the atrophy from the legs to the thighs and the marked fascicular twitchings of the thigh-muscles is unlike ordinary cases of that kind. In some of Charcot and Marie's cases, too, there appears to have been affection of sensation.

<sup>1</sup> *Revue de Médecine*, February 1886.

<sup>2</sup> The Peroneal Type of Muscular Atrophy, 1886. ]

<sup>3</sup> No. 27.

I have since watched in the electrical room at Queen Square a case under the care of Dr. Ferrier, in which the onset and progress of muscular atrophy was precisely similar, but there was no sensory affection.

#### CASE VI.

*Atrophic Paralysis of Legs, chiefly of the Anterior Tibial Group—History of Severe Pains at Onset—Impairment of Sensation—Well-marked R.D.—Subsequent Spread of Atrophy, with Fascicular Twitchings, to Muscles of Thighs—Doubtful and Transient Affection of Hands—Occasional Difficulties of Micturition.*

Benjamin B., æt. 38, formerly a zinc-worker, afterwards a cabman.

He was at first under the care of my colleague Dr. Ferrier, who made the following note (January 12, 1883): "Poliomyelitis of three years' duration, affecting chiefly the anterior tibial muscles, and in a less degree the peronei and extensors of the toes. The peronei act slightly to a strong faradic current; the tibials not at all. No history of syphilis. No history of lead; no blue line." He was ordered galvanism to the legs and lumbar region, and quinine.

He was passed on to the care of Dr. Horrochs, and came under me when that gentleman resigned his office at Queen Square.

He stated then (August 8, 1883) that he had improved. Nevertheless the paralysis of the extensors was very marked. In walking he bent his knees and flexed the thighs overmuch, a sort of high-stepping action. This, taken together with his general appearance, suggested inquiries as to alcoholism, and he admitted that he used to take half a pint of whisky daily, with a small amount of beer. He formerly had gout. Questioned by me at a later date (August 1885) as to the mode of onset, he said that it first came on with severe pains from the heels to the hips. The pain made him so sensitive that he could not even bear to have a door slammed near him. Nevertheless he did not remember that the legs were ever painful to touch. The pain he thought was rheumatic, but there was no affection of the joints. The legs and feet were numb, and felt like wool.

December 19, 1883.—Has a "rheumatic feeling" in the R. elbow, and the R. hand feels stiff in the morning. Is now taking Pot. iod. gr. v. ter die instead of the quinine.

February 13, 1884.—Complains that his urine runs from him when he coughs. During this year he continued the galvanism,

and always he said relapsed when he discontinued it temporarily. Tr. nucis vomicæ ℞. were added to his medicine, and he appears to have improved a little; but as the cold weather came on, he got worse again.

January 28, 1885.—Complains that his knees, particularly the L., give way suddenly, so that he falls.

March 25.—Increased weakness of legs. Giddiness.

Electrical examination.—Little, if any, action to faradism in the affected muscles (=the whole anterior tibial group). Galvanism: L. extensor digitorum gives slight action (ASZ > KSZ ?) to strong current; R. gives none.

June 17.—All through the winter, and since, he has been getting worse. He ascribes it to hard work, and anxious worrying work as a cab-driver. The thigh-muscles, he says, are wasting and getting weak.

On examination, I find a decided wasting of the muscles above the knee. Very marked twitching of the muscle-substance, not merely fibrillar, but involving large bundles of the muscle. This is most evident in the L. tensor fasciæ femoris, and in the R. hamstrings, but it is also noticeable in the quadriceps extensor of both thighs. He has considerable difficulty in extending the L. knee, but not the R. Patellar tendon-reaction present R. (a visible contraction of the muscle, but not enough to lift the leg); absent L. Electrical examination of the thigh-muscles showed perfectly normal action, both to faradism and galvanism; except that the faradic reaction of the L. biceps cruris seemed doubtful.

The hands and arms, he says, are quite strong.

July 15.—He has had a troublesome pulling horse; and he says the hands feel stiff in the morning, and thinks they are not so strong as before. He appears to use the L. hand awkwardly, but on examination I can make out nothing definitely wrong. Tendon-reactions well marked at wrists and elbows. As to the thighs, he has had them galvanised since June, and has noticed no further wasting as yet.

August 11.—He tells me that the numbness which he originally had has not quite passed away from the feet.

October 8.—The slight affection of the hands has quite passed off.

November 6.—A re-examination of his legs was made. Below the knees, muscles of both legs small, R. smaller than L.; the anterior group of muscles being the worst. Above the knee, very much less muscular twitching than there had been. Yet he is, as he describes it, "weaker at the knees" than previously. He can hardly stand without propping his thighs against something.

Patellar tendon-reaction very slight L.; apparently absent R. Electrically, normal reaction in muscles of thighs, R.D. in anterior tibial group.<sup>1</sup> He felt the current very little, especially in the R. leg; thus he used to have a current of 40 m.a. from the dynamo, applied by sponging a moderate size electrode down his legs, and was not content to have a weaker current. During the early part of next year (1886) he attended with great regularity for this treatment, and said that he invariably got worse when he left it off. Exposure to cold had the same effect of making him worse.

February 17, 1886.—It appears that he still has the numb feeling, though at one time he said he had quite got rid of it. Examining the sensation in his soles, I find he can feel light touches pretty well; yet he cannot tell accurately in how many places he is touched, even when fingers are used quite an inch apart. In most parts he does not appreciate a pin-prick as such, nor flinch when pricked pretty severely. Cannot tell the difference between a hot and cold test-tube. Electro-sensibility diminished in the legs, as I have said above.

March 5.—During the winter the numbness has extended up the back of the thighs and to the buttocks. Muscles of thighs getting small and flabby; they still act to galvanism or the dynamo, but a strong current is necessary for the hamstrings. It is felt very little here.

June 21.—The legs are no worse, although he has been attending irregularly; indeed he thinks the R. thigh is filling up a little. Has difficulty in micturition; sometimes the urine runs from him; sometimes he cannot pass it when he wishes.

<sup>1</sup> *Faradism*—

A. To muscles.

R. anterior tibial group	.	.	.	no action to strongest current.
peronei	.	.	.	acts. " "
gastrocnemius	.	.	.	acts. " "
L. extensor digitorum	.	.	.	acts to a very strong current.
peronei	.	.	.	act to fairly " "
gastrocnemius	.	.	.	" " "

B. To peroneal nerve-trunk.

R. side, peronei only act.  
L. side, peronei and extensor digitorum act.

The current is felt more in the L. than in the R. leg, but no pain is felt even with a very strong current.

*Galvanism*—

R. extensor longus digitorum	.	.	KSz = ASz at 20 elements and 20 m.a.
L. " " "	.	.	KSz > ASz at 20 elements 15 to 20 m.a.
Muscle twitch slow.			
R. vastus internus	.	.	KSz > ASz at 18 elements 15 m.a.
L. " " "	.	.	KSz " 16 " 12 "
			ASz " 20 " 13 "
Muscle twitch quick.			



January 18, 1887.—He has had to leave off treatment since October last. On the whole, the legs are weaker, and the glutæi, especially the R., are beginning to waste. Still some urinary difficulty.

April 13.—No further change.

I should add that he knows of no similar case in his family.

*Myopathic atrophies*, i.e., those in which the muscle is primarily diseased, are said to have the following characteristics:—(1.) Onset in early life, childhood, or adolescence, or at least before twenty; (2.) commencement not in the small muscles of hand, but in the muscles of upper arm, shoulder, or pelvic girdle (juvenile type of Erb), or in the muscles of the face (infantile type of Duchenne, Landouzy, and Dejerine); (3.) course slow, with long stationary periods; (4.) no fibrillar tremors; (5.) no reaction of degeneration; (6.) enlargement of some muscles may be present; (7.) heredity is frequent.

Out of these characteristics doubt has been thrown on (4) and (5). By (6) and (7) myopathic atrophy is brought into relation with pseudo-hypertrophic paralysis, in which, as is known, atrophy may supervene.

## CASE VII.

*Muscular Atrophy affecting Muscles of Upper Arm and Shoulder, and in less degree Thighs and Extensors of Spine—Face not Affected—No Fibrillar Twitching—Electrical Reactions Normal (except in Infra-spinati)—No Heredity.*

Henry W. L., æt. 20, chamois-leather dresser.

A tall, weedy-looking man, complaining of wasting and loss of power in the arms and legs. He noticed this first three years ago in the arms and thighs; it came on in both parts simultaneously, he thinks. Cause unknown to him. Unable to work for two years. Has nothing further to complain of, except sleeplessness at night and frequent emissions, which he says make him weak and languid.

The wasting, though not extreme, is well marked, and affects on both sides the biceps, triceps, pectoral, and serratus magnus, and supra- and infra-spinatus. There is much loss of power in these muscles. Deltoids small, the L. partly paralysed; the R. presents a peculiar appearance, being wasted immediately below the clavicle, while lower down there is a well-nourished rather prominent mass of muscle. Trapezii weak, especially the R.

Rhomboids, sterno-mastoids, latissimi dorsi act well. Fore-arms perhaps rather small, but no definite wasting. Hands quite normal. In the trunk there is weakness of the erectores spinæ; he walks with his spine arched backward, and in getting up from the prone position has to help himself with his hands. Doubtful wasting of glutæi; decided wasting of thigh-muscles. The calves do not feel hard or enlarged, nor yet are they wasted. Face not affected; although he looks a little expressionless, he can shut the eyes completely, show the teeth, and whistle well.

No muscular twitchings. No affection of sensation. No affection of sphincters. Patellar tendon-reactions normal.

The muscles of the upper limbs were examined electrically, and found to react normally both to faradism and galvanism, with the single exception of the infra-spinati, in which, though the faradic reaction was normal, and the muscle-twitch (galvanic) of normal character, the polar formula was reversed.<sup>1</sup>

Family history.—Has one brother and one sister; neither of them are paralysed, nor has he heard of any paralysis in his family. His mother is insane.

He was ordered various tonics and electrical treatment—sometimes faradism, sometimes the dynamo current—and went on with this treatment till August. If anything, he got rather worse. He then became an in-patient, care of Dr. Buzzard; and in October, when he again came as out-patient, he thought that his complaint was practically stationary.

I learnt in February (when he was shown to the Neurological Society) that he had been at an earlier period under Dr. Hughes Bennett, and Dr. Bennett considered that his calves were then enlarged.

<sup>1</sup> December 17, 1886.

*Galvanism—*

L. infra-spinatus . . . . .	KSo . . . . .	ASZ at 12 m.a.
	(and sometimes KSz)	
	occasional.	
R. „ . . . .	Much the same reaction.	
March 24, 1887.		
L. infra-spinatus . . . . .	ASZ with 22 elements . . . . .	30°
	(moderate).	
	KSo	
	ASZ 26 elements. . . . .	
	(somewhat violent).	
	KSZ	
	(moderate).	
R. „ . . . .	ASZ 22 elements . . . . .	30°]
	(slight).	
	KSZ 34 elements.	

## CASE VIII.

*Atrophy of Upper-Arm Muscles—Weakness of Lower Limbs and of Extensors of Spine—Enlargement of Calves—Face Unaffected—No Fibrillar Twitchings—Electrically, Alteration of Polar Formula in some Muscles—A Cousin is unable to Walk.*

Henry A. B., æt. 25.

June 4, 1887.—A tall, fairly healthy-looking man. Complains of weakness and wasting in the back, arms, and legs, principally R. side. The weakness and wasting have been coming on, he says, simultaneously and gradually during the last four years. Aching in the back. No pain in limbs; no sensory affection except slight and occasional "pins and needles," in R. knee and part of R. leg (lower part); less often in L. Says that sometimes he falls from giving way of the legs. Finds difficulty in going up and down stairs.

Family history.—Has one brother æt. 23, healthy, and one sister æt. 20, who suffers from anæmia, but who exhibits no paralytic symptoms. She tells me that a female cousin, æt. 25, who lives at Chatham, has been unable to walk since the age of 10; but she knows nothing further of her complaint.

He walks with his back arched. He has some difficulty in rising from a chair. In rising from the prone position, he has to help himself with his hands: he does not distinctly climb up his thighs, but he gives himself a push off with his hands, and so gets up. The condition of individual muscles is as follows:—

In the upper limbs and shoulder girdle: biceps, brachialis anticus, triceps, both sides, and R. deltoid, are small; L. deltoid doubtful. [Atrophy, though not extreme, is best marked in R. upper-arm muscles, especially biceps, and in L. biceps.] Action of R. flexors very weak, of L. fair; of extensors on both sides fair; of deltoids good. Pectoralis major, upper part small, especially on R. side; action on both sides fair. Spinati muscles small on both sides. The action of the rhomboids, serrati magni, and trapezii is normal. The muscles of hands and fore-arms are well-nourished and strong.

It should be added that the external head of the triceps is not at all wasted, but stands out especially on the R. side, and feels firm and knotty. This has always been so, he says.

Lower limbs and pelvic girdle: extensors of R. thigh small, and their action weak; L. extensors small, but in less degree. Hamstrings small on both sides. Glutæi perhaps rather small

on R. side. Calf-muscles decidedly large and firm; he says this has been always noticeable—indeed they have been bigger than now. Muscles on front of legs (below knee) normal.

No twitching of muscle.

Patellar tendon-reactions present on both sides, but feeble.

No affection of facial muscles. Pupils rather large and sluggish, but they react to light.

Electrical examination showed that to the faradic current the reaction was in most muscles normal, though diminished in some muscles; to the galvanic current the reaction was also normal in most muscles; but in some the polar formula was altered, though even here the muscle-twitch was of normal character.<sup>1</sup>

He was ordered Tr. nucis vomicæ m̄x. ter die, and electricity (galvanic or dynamo current) to the affected muscles.

<sup>1</sup> Upper limbs.

*Faradism*.—All muscles react to moderate current, except R. biceps: this muscle reacts only to strongish current.

*Galvanism*—

Deltoids R.	.	.	.	.	KSz ASo	.	.	.	.	at 1.5 m.a.
					KSz ASz	.	.	.	.	4.5 "
" L.	.	.	.	.	ASz KSo	.	.	.	.	1.5 "
					ASz KSz	.	.	.	.	4 "
					KSz = or < ASz	.	.	.	.	5 "
[∴ Polar formula altered in L. deltoid.]										
Biceps R.	.	.	.	.	KSz ASo	.	.	.	.	5 "
					KSz (violent) > AOZ	.	.	.	.	8 "
					AOZ > ASz	.	.	.	.	12 "
[∴ Polar formula as regards anode altered in R. biceps.]										
" L.	.	.	.	.	KSz ASo	.	.	.	.	5 "
					KSz > ASz	.	.	.	.	6 "
					ASz > AOz	.	.	.	.	about 10 "

I have preserved no note as to the triceps and other muscles.

*Lower limbs*.

*Faradism*.—The vasti, gastrocnemii, anterior muscles of leg, act well on both sides. The hamstrings under a moderately strong current do not act.

Glutæus maximus R. acts occasionally when a particular point is touched;

L. glutæus doubtful.

*Galvanism*—

Biceps cruris R.	.	.	.	.	KSz	.	.	.	.	at 12 to 14 m.a.
					ASo	.	.	.	.	20 "
										(more than which he cannot bear).
" L.	.	.	.	.	Same reactions. <sup>1</sup>					
Gastrocnemius R.	.	.	.	.	KSz	.	.	.	.	3 "
					ASz	.	.	.	.	4.5 "
" L.	.	.	.	.	KSz	.	.	.	.	5 "
					ASz	.	.	.	.	10 "
Vastus internus R.	.	.	.	.	KSz = ASz	.	.	.	.	4.5 "
					KSz = or > ASz	.	.	.	.	5 "
										(doubtful alteration of formula).
L.	.	.	.	.	KSz ASo	.	.	.	.	4.75 "
					KSz > (?) ASz	.	.	.	.	8 "

Character of muscle-twitch normal in all instances.



He is now (October) practically in the same condition as when first seen ; except that he affirms that he can walk rather better. He thinks the arms are no weaker ; but the wasting is more marked in biceps, brachialis, and triceps of both arms. The deltoids, not having wasted further, begin to look large by contrast. There is also commencing weakness of the R. serratus magnus.

[*Postscript.*—In the electrical formulæ of this paper (as in my paper in the last volume of the “Reports”), I have used the (original) German lettering ; thus :—

KSZ (Kathode, Schliessung, Züchung)	means the same as							CCC.
ASZ	...	...	...	...	...	...	...	ACC.
AOZ (Öffnung)	...	...	...	...	...	...	...	AOC.
KOZ	...	...	...	...	...	...	...	COC.

a small *l* or *c* being employed in each case to denote a very slight contraction.

The German formulæ have the advantage of not employing the same letter (C) in several senses (cathode, closure, contraction). Where CC is also employed, as is sometimes done, as an abbreviation for “constant current,” there is a real risk of confusion.]

ON A CASE OF  
MUSCULAR ATROPHY AND GANGRENE OF  
THE LUNG AFTER TYPHOID FEVER.

BY

T. W. SHORE, M.D.

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Atrophy of more or less extensive groups of muscles has long been known as a sequela of typhoid fever ; but in comparatively few cases have any examinations of the nervous system been made after death, and in none of the recorded examinations, so far as I am aware, has atrophy of limited groups of muscles after typhoid been shown to be the result of morbid changes in the grey substance of the spinal cord.

A case of atrophy of this kind came under my observation three years ago, and the opportunity having unexpectedly presented itself, owing to death from gangrene of the lung, I have been able to discover some definite and interesting changes in the anterior cornua of the grey matter of the cord. At the present time, when the tendency is to regard muscular atrophies as due to peripheral neuritis, any definite evidence of the central origin of these affections is of value. For this reason, as well as on account of the interest attached to the cause of death, of which I advance a new explanation founded on recent physiological investigations, I have been led to describe my results in the present paper.

The following is a brief clinical summary of the case.

E. C., female, married, aged 26, admitted September 9, 1884. She gave the following history :—

Had not suffered from any illness except an “epileptic” fit two years ago, until four months previously, when she was treated at this Hospital for typhoid fever, and was discharged about ten weeks ago. About three weeks after leaving Hospital she noticed a loss of power in the right hand. Her grasp became feeble and the wrist dropped. This loss of power gradually

extended to the fore-arm, so that within about a week the hand and arm became as bad as at present. About four to five weeks after leaving Hospital, the same loss of power began in the left hand and arm, till the loss of power became as complete as on the right side. During the development of the paralysis she has never experienced any pain or uneasy sensations, though at times slight "numbness" has been present.

*Present condition.*—Anæmic; appears to have lost flesh. There is no paralysis of any muscles about the eyes, face, head, or neck. The ophthalmoscopic appearances are natural. No difficulty in deglutition, articulation, or mastication. The grasp of both hands is feeble, more so the right. There is marked wrist-drop. All the muscles of the arms are generally flabby. The power of the extensor muscles of the hand and fingers is lost; power of supination and pronation is diminished. There is no loss of power in the biceps, triceps, or any other muscle of the upper arms. The extensors of the hand and fingers are atrophied. The interossei do not appear to be atrophied, nor do the muscles of the thenar and hypothenar eminences. In the *right* fore-arm the whole of the extensors as well as the supinator longus are inactive to faradism and to galvanism. The interossei muscles of the ball of the thumb as well as those of the little finger have normal reactions to faradism and to galvanism. All the muscles of the upper arm react normally. In the *left* fore-arm, the faradic excitability of the extensor muscles is much diminished, though not wholly lost. The supinator longus does not react at all. The flexors, interossei, muscles of the thenar and hypothenar eminences, as well as those of the upper arm, react normally to faradism. The galvanic reactions are the same as the faradic. There is no anæsthesia or hyperæsthesia of the affected parts; and the patient does not complain of pain. There are no abnormalities in the muscles of the legs.

Heart and lungs normal.

Urine natural.

September 10.—Patient had two epileptiform fits this morning.

September 18.—Under the daily use of galvanism to the affected muscles, patient states that she has more power in the arms, though the electrical reactions continue unchanged.

September 19.—Slight hæmoptysis this morning; sputum watery; breath foul; a few râles only to be heard in chest.

September 21.—Still slight hæmoptysis.

September 23.—No more hæmoptysis; only a few râles to be heard in front of chest.

September 24.—Has had much pain in chest during night, with much distress in breathing. Is now much embarrassed. Physical signs in chest have undergone a marked change. There are now the signs of pneumothorax on the right side. The distress continued, and patient gradually sank and died at 6.30 P.M.

*Autopsy* eighteen hours after death :—

*Chest.*—Fœtid gas and purulent fœtid fluid in the right pleural cavity. Right lung collapsed and gangrenous, especially at the apex, where there is a large gangrenous cavity. No cause for the gangrene was found—no embolus, thrombus, foreign body, &c., &c. Left lung natural. Heart displaced to left, otherwise normal. Other viscera normal.

*Brain.*—To an ordinary naked-eye examination, natural.

*Spinal Cord.*—This was removed entire, enclosed in its dura mater. To the naked eye there were no abnormal appearances, either in the membranes or in the cord itself, except on cutting into the cord between the origin of the sixth and seventh cervical nerves, where on the right side of the cord in the anterior cornu was a little softened spot.

*Microscopic examination.*—The cord was hardened in 1 per cent. bichromate of ammonium solution, frequently changed, for a fortnight, and then preserved in spirit. It was then examined in segments, corresponding to the origins of the various spinal nerves. Sections were cut with an ether-freezing microtome. They were stained, some in aniline black, others in picrocarmine, others in picrocarmine and osmic acid, and some in hæmatoxylin. They were then cleared and mounted in Canada balsam. A large number of sections were carefully examined in, as nearly as possible, a continuous series. It is to be regretted that the ribbon method was not adopted, as then the extent of the lesions could have been better defined. The sections taken from the segment corresponding to the third cervical nerve are normal. At the upper part of the segment corresponding to the fourth cervical nerve no marked changes are found, but extending from the lower part of the segment of the fourth nerve to the level of the origin of the eighth cervical nerve, both anterior cornua are found to have undergone changes, which are generally most marked on the *right* side, and are most conspicuous at the level of the origin of the sixth and seventh nerves. Sections taken from the upper part of the dorsal region of the cord also present morbid changes, but in a different situation. Other parts of the cord do not present any abnormal appearances.

The changes found in the cervical region, which give the



explanation of the muscular atrophy, may be summarised as follows (those found in the dorsal region will be described separately):—

(1.) General granular appearance of the neuroglia of the affected parts of the grey matter.

(2.) An increase in the number of nuclei of the neuroglia of the grey matter of the anterior cornua, particularly seen in sections between the level of the origin of the fourth and fifth cervical nerves.

(3.) Atrophy of some of the large multipolar ganglion cells of the anterior cornua, more particularly the cells of the antero-internal group at the level of the origin of the fifth and seventh cervical nerves.

(4.) The nuclei of these atrophied cells are indistinct.

(5.) The atrophied cells have in many cases lost their processes.

(6.) In several sections, more particularly those from about the level of the origin of the seventh cervical nerve, are a few much dilated capillaries filled with blood corpuscles, and here and there small extravasations of similar corpuscles are seen around the dilated capillaries. In some cases these masses of corpuscles surround isolated ganglion cells whose processes have obviously been broken off short, suggesting that they have been ruptured by the extravasations. Similar appearances are seen in the lower part of the segment corresponding to the fourth nerve.

(7.) In sections from the level of the origins of the fifth, sixth, and upper part of the seventh nerves, the substance of the anterior cornua and the adjoining parts of the posterior cornua appears to have been broken away, and around the broken space is found evidence of destructive inflammatory changes, viz., a large number of leucocytes with granular and fibrous debris of neuroglia, and large ganglion cells with their processes broken off scattered amongst the debris of the neuroglia.

(8.) The upper part of the segment corresponding to the fourth nerve is fairly normal. The lower part of this segment shows dilated capillaries and small extravasations of blood corpuscles. The upper part of the segment of the fifth nerve shows the destructive changes named under (7). These are more marked in the lower part of the segment of the fifth nerve, and throughout the segment of the sixth nerve. The same changes, though less marked, are seen in the upper part of the segment of the seventh nerve, where the appearances are very similar to those seen in the upper part of the fifth segment. In the lower part of the segment of the seventh nerve, the

dilated capillaries and the extravasations around them are again well seen, and these are present, though to a much less extent, in the segment of the eighth nerve.

These changes I take to be the signs of a moderately acute inflammatory process, which has led to softening in the region of the origins of the fifth, sixth, and seventh cervical nerves, above and below which are areas of congestion. They certainly are not the changes of chronic inflammation, and are not those found in "chronic anterior poliomyelitis."

The results of the microscopic examination agree with the clinical characters of the case, which I think is correctly described as one of "localised sub-acute or acute anterior poliomyelitis of the cervical region, consecutive to enteric fever."

The second point of interest in this case is the sudden onset of gangrene of the lung, ending fatally in pneumothorax. During life, no cause could be assigned for this gangrene, and at the autopsy, all the ordinary causes of such a condition were carefully sought after, but none was found. This part of the case, therefore, remained ambiguous, and I was for some time at a loss for an explanation of it. It occurred to me whether there might not have been some local interference with the blood supply of the lung of a nervous origin and of the nature of vasomotor spasm; but the absence of any special reason for this, which, if present, must have been of a very local and unique character, rendered such an hypothesis extremely doubtful. The question then presented itself to my mind, could there have been some nervous influence of the kind usually called "trophic"? Though, physiologically speaking, there was every reason to suppose that "trophic" nerves for the lungs existed, yet nothing was then known of the course of these nerves, and still less of the position of the "trophic" centre.

Early in 1886 there appeared a paper by Gaskell,<sup>1</sup> which threw a great deal of light on the innervation of various viscera, and a perusal of this led me to make a more careful examination of my specimens, and to direct my attention specially to the thoracic region of the cord. This renewed examination was rewarded by finding signs of congestion and early inflammation in the position of Clarke's vesicular column in the upper part of the thoracic region (first, second, and third thoracic nerves).

According to Gaskell, the vascular and visceral systems are innervated by two sets of nerve fibres:—

(1.) Vaso-constrictor, cardio-accelerator, and visceromotor

<sup>1</sup> On the Structure, Distribution, and Function of the Nerves which Innervate the Visceral and Vascular Systems. *Journal of Physiology*, vol. vii. No. 1, 1886.

set of fibres, whose action in general is to cause contraction of involuntary muscle.

(2.) Vaso-dilator, cardio-inhibitory, and viscero-inhibitory set of fibres, whose action is to check or inhibit contraction of involuntary visceral and vascular muscle.

These two sets of fibres are anatomically as well as physiologically distinct. The motor set leave the central nervous system as *small medullated* or small "leucentric" fibres, become connected with the ganglion cells of the *proximal* set of sympathetic ganglia, there lose their medullary sheaths, and emerge as *non-medullated* or "polio-enteric" fibres, and are distributed as such to the viscera. The inhibitory set leave the central nervous system as small "leucentric" fibres, and preserve this character till they reach the *peripheral* set of ganglia or the ganglion cells in the organs themselves, where they become non-medullated.

For the heart and lungs, the motor fibres probably leave the spinal cord in the rami communicantes between the second, third, and fourth thoracic nerves and the sympathetic, ascend in the sympathetic to the first thoracic ganglion, thence pass to the pulmonary and cardiac plexuses and the organs themselves. The inhibitory set of fibres for the heart and lungs reach these organs by way of the vagi nerves.

Concerning the mode of action of these two sets of nerve-fibres, Gaskell shows conclusively, at any rate for the heart, that they produce contraction or inhibition by a *direct action on nutrition*. The cardio-accelerator (polio-enteric) fibres cause increased contraction of the heart, followed by exhaustion, and due to an increase of the *destructive* or *dissimilative* or *katabolic* process of nutrition, whilst the cardio-inhibitory (small leucentric) fibres produce the opposite effect by increasing the *constructive*, *assimilative*, or *anabolic* process of nutrition.

Alluding to this, Gaskell<sup>1</sup> says:—"The laws governing the structure and course of similar fibres throughout the body have already been indicated in these pages; the evidence is becoming daily stronger that *every tissue* is innervated by two sets of nerve-fibres of opposite characters, so that I look forward hopefully to the time when the whole nervous system shall be mapped out into two great districts, of which the function of the one is katabolic, of the other anabolic to the peripheral tissues: two great divisions of the nervous system which are occupied with chemical changes of a synthetical and analytical character respectively, which, therefore, in their action must show the characteristic signs of such opposite chemical processes."

<sup>1</sup> *Loc. cit.* p. 50.



Gaskell also shows that the parts of the cord which contain Clarke's column of cells *correspond exactly* with those portions from which the visceral nerve-fibres take origin; in fact, he regards Clarke's column as forming a large visceral nucleus. He shows that the visceral nerves take origin either from this column, or from the lateral column of cells.

If the present case be viewed in relation to these facts, it seems to me that we have a definite and extremely probable explanation of the gangrene of the lung. I have found congestive and inflammatory changes in the upper portion of the thoracic part of Clarke's column of cells, which is the part concerned probably as the centre for the katabolic fibres found in the sympathetic branches to the lungs and heart. An irritation of this centre, such as would be the case in congestion or in early inflammation, by leading to an increase of the *destructive* process of nutrition in the lung, might cause gangrene. On the other hand, the result might be due to a destruction of some centre for the anabolic fibres to the lungs; but these could hardly arise from the thoracic part of Clarke's column, for Gaskell shows that they run in the vagi nerves. Again, it might be due to a stimulation of the centre for the katabolic fibres forming the vaso-constrictor nerves of the vessels of the lung, and so be *indirectly* due to an interference with the nutrition of the lung. In any case, I feel certain that the gangrene in this case is due to the lesion in the spinal cord. It is interesting to note that though the changes affect both sides of the cord, they were more marked on the right side, and that the gangrene was of the *right* lung.

A summary of the literature on the subject of nervous affections after typhoid fever may be interesting. I have endeavoured to confirm the references given, but have not been able to obtain access to all of them.

Ollivier<sup>1</sup> described cases of paraplegia after typhoid, dysentery, and cholera, which, without actual proof, he regarded as of spinal nature. Graves regarded similar cases to be of the nature of "reflex paralysis." Other early recorded cases are those of Monneret<sup>2</sup> and Fleury. Gubler<sup>3</sup> later described cases which he allied with the "asthenic paralyses" of anæmia and chlorosis. He subsequently described atrophic paralyses after typhoid, but examinations of the cords gave negative results.<sup>4</sup>

<sup>1</sup> *Traité des Maladies de la Moelle épinière*, 1837, tome ii.

<sup>2</sup> *Compend. de Méd. pratiqu.*, 1846, viii. p. 213.

<sup>3</sup> *Des Paralysies dans leur Rapport avec les Maladies aiguës et spécialement des Paralysies asthéniques, &c.* *Arch. génér.*, i. et ii., 1860.

<sup>4</sup> *Comp. Rend. et Mem. de la Biologie*, 1862, p. 40.



About the same time Virchow and Biermer,<sup>1</sup> Macario,<sup>2</sup> Leudet,<sup>3</sup> and G. Fritz<sup>4</sup> gave clinical accounts of paralytic cases after typhoid, as well as of the various nervous symptoms which may occur during the fever, and which constitute the spinal and cerebro-spinal forms of typhoid. Later, Bernardt<sup>5</sup> recorded a case of atrophic paralysis of muscles of right arm with slight alteration of electrical reactions of muscles, due to localised inflammation of the radial nerve.

Ebstein<sup>6</sup> found disseminated patches of sclerosis in the spinal cord, medulla, and pons after typhoid fever. Eisenlohr<sup>7</sup> described atrophic paralysis with diminished electrical reactions, pains, and effusion into joints after typhoid, associated with serous effusion into the sheath of the sciatic nerve.

Following Leyden,<sup>8</sup> the nervous sequelæ after typhoid may be arranged into three groups of cases:—

I. *Paralyses of single muscles or groups of muscles supplied by same nerve.*—Cases resembling diphtheritic paralysis, viz., facial palsy, strabismus, paralysis of palate, and disturbances of accommodation, are recorded by Gubler.<sup>9</sup> Aphonia after typhoid is recorded by Nothnagel,<sup>10</sup> Traube, and Türk.

Nothnagel also records a case of atrophic paralysis of muscles of the arm, with diminished electrical reactions and neuralgic pains. Mayer<sup>11</sup> recorded a case of paralysis of the ulnar nerve after typhoid. Paralysis of the shoulder-muscles with shooting pains is recorded by Leyden.<sup>12</sup> Destruction of muscle-substance has been found in cases of paralysis and atrophy of the adductors of the thighs after typhoid. Billroth<sup>13</sup> describes these as acute inflammation of muscle.

All such cases Leyden regards as due to *peripheral neuritis*, and declares that no case of circumscribed muscular atrophy after typhoid has been proved to be of central origin. The case the details of which I have just described is therefore interesting,

<sup>1</sup> Virchow's *Gesammelte Abhandlungen*, 1856, p. 683.

<sup>2</sup> *Gaz. med.*, 1857 and 1858. *Mem. sur les Paralys. dynamiques ou nerveuses.*

<sup>3</sup> *Gaz. med.*, 1861. *Remarques sur les Paralys. essent. consec. à la Fièvre typhoïde.*

<sup>4</sup> *Etude cliniq. sur les divers Symptômes spinaux observés dans la Fièvre typhoïde.* Paris, 1864.

<sup>5</sup> *Zur Pathologie der Radialisparalysen.* *Archiv f. Psych. u. Nervenkrankheiten*, 1874, iv. p. 601.

<sup>6</sup> *Deutsches Archiv f. klin. Med.*, Bd. ix. and x., 1872.

<sup>7</sup> *Pathol. der Typhusläsungen.* *Arch. f. Psych.*, Bd. vi., 1875.

<sup>8</sup> *Klinik der Rückenmarkskrankheiten*, Bd. ii. 1875, p. 246.

<sup>9</sup> *Loc. cit.*

<sup>10</sup> *Die nervösen Nachkrankheiten des Abdominaltyphus.* *Deutsches Arch. f. klin. Med.*, 1872, p. 480.

<sup>11</sup> *Die Eleck. auf prak. Med.* Berlin, 1861.

<sup>12</sup> *Loc. cit.*

<sup>13</sup> *Surgical Pathology*, Syd. Soc. translation, p. 272.

as being one of localised muscular atrophy after typhoid, due not to neuritis, but to a subacute myelitis of the grey substance of the anterior cornua in a localised part of the cord.

II. *Paralyses of a spinal type*.—Under this head may be included the “asthenic paralyses” of Gubler, in which there is general weakness of the lower extremities, with incomplete loss of power; no atrophy; no loss of sensation or hyperæsthesia. Recovery takes place in these cases.

Other cases of a spinal type are those showing loss of power, hyperæsthesia, and rigidities of the lower extremities, due to meningitis or myelo-meningitis (Leyden, Virchow, Ross).

A remarkable case of acute ascending paralysis, like those of Landry, is recorded by E. Leudet.<sup>1</sup> Death took place by bulbar symptoms; no lesion found post-mortem.

Benedict, Leyden, and Ross speak of cases of progressive muscular atrophy, atrophic spinal paralysis of children and of adults, as occurring after typhoid.

Leyden also speaks of cases of atrophic paralysis of a paraplegic type. In these hyperæsthesia is usually a marked symptom, and pains are frequent. Leyden, however, thinks that these are cases of peripheral neuritis, and examinations of the nerve-centres in such cases are few, and have yielded no positive results.

Cases of acute ataxy with affections of speech and incoördination are recorded by Westphal<sup>2</sup> and Ebstein.<sup>3</sup>

Cases of ascending myelitis have lately been described by Raymond.<sup>4</sup> Troussseau<sup>5</sup> speaks of a case of paraplegia due to inflammation and suppuration of the lower part of the spinal cord.

III. *Affections of a Cerebral Type*.—Psychical affections, chiefly of the character of melancholia; hemiplegic paralysis, aphasia, &c., are recorded after typhoid. Scoresby Jackson<sup>6</sup> recorded a case of right hemiplegia with facial palsy and aphasia after typhoid fever. Benedict recorded a similar case, with the addition of amaurosis, due to atrophy of the optic disc. Friedrich<sup>7</sup> has described several cases of aphasia in children after typhoid fever.

<sup>1</sup> Remark. sur les Paralys. essent. conséc. à la Fièvre typhoïde à propos d'un fait de Paralyse ascendante aigue, &c. *Gaz. méd. de Paris*, 1861, p. 19.

<sup>2</sup> Bemerkungen und Untersuchungen über die Krankheiten des centralen Nervensystems. *Arch. f. Psych. und Nervenkrank.*, iv. 1874.

<sup>3</sup> *Loc. cit.*

<sup>4</sup> Deux Cas de Myelit. ascend. observés pendant la Convalesc. de la Dothient. *Revue de Médecine*, 1885.

<sup>5</sup> *Clinique Médicale*.

<sup>6</sup> *Edinburgh Medical Journal*, 1867.

<sup>7</sup> *Journ. für Kinderkrankheiten*, Bd. xliv., 1865.



ON

## NASAL OBSTRUCTION AND ITS TREATMENT.

BY

W. J. WALSHAM.

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In the *Lancet* of December 29, 1883, I called attention to nasal stenosis as a cause of nasal and post-nasal catarrh, and there discussed chiefly the treatment of two forms of stenosis, viz., that depending on deflections of the septum, and that due to hypertrophy of the turbinated bodies. Since then I have had a very considerable number of cases of nasal obstruction under my care, depending not only on the above-mentioned conditions, but on various other states of the nasal chambers. I here propose giving a general *résumé* of the morbid processes leading to obstruction of the nasal passages, and the treatment that I have found both in the Hospital and in private practice to be attended with the best results.

In these days of rapid diffusion of surgical knowledge, there may be little that is new or original in this paper to those making a specialty of diseases of the nose; but I venture to hope, nevertheless, that to the general reader of these Reports an account of my experience during the last few years in this department of surgery may not be altogether uninteresting.

The *symptoms* more or less common to all forms of nasal obstruction, no matter on what this depends, are:—Obstructed respiration through the nose, a so-called nasal tone of voice, mouth-breathing, and often noisy respirations during sleep. But the cause of the obstruction, although it may often be guessed at, as, for instance, in the case of adenoid vegetations, by the contracted nares, half-open mouth, and dead tone of voice, can only be accurately ascertained by a thorough examination of the nasal chambers and naso-pharynx, by anterior and posterior rhinoscopy, and by the introduction of the finger into the naso-pharynx behind the soft palate.



Examination of the anterior nares by merely raising the ala of the nose and inspecting the parts by ordinary daylight is not sufficient to make an accurate diagnosis of the various conditions that may obstruct the passage. The parts should always be explored by means of an efficient speculum and a ray of strong artificial light, such as may be obtained by the use of a powerful condensing lens and the ordinary head-mirror. In many cases it is necessary to thoroughly cleanse the parts before the condition of the passages can be ascertained. Usually this can readily be done by mopping them out with small pellets of moist cotton-wool twisted on the end of a nasal probe or held by the nasal forceps, having previously well sprayed the parts, if abnormally sensitive, with a solution of cocaine. Where, however, they are obscured by adherent crusts, it may be as well to previously cleanse them with a weak alkaline lotion, or with Dobell's solution<sup>1</sup> applied by the anterior and posterior nasal spray-producer.

The parts having been thus thoroughly cleansed, a systematic examination with the speculum and nasal probe should be made from the front. It is not sufficient merely to introduce the speculum and view the parts with the head in that position in which it happens to be at the time; the head should be thrown well back in order to examine the middle turbinated body and the upper portion of the nasal chambers; then held straight for the purpose of ascertaining the condition of the inferior turbinated body and the septum; whilst, finally, the chin should be depressed in order to inspect the floor of the fossa and the patency of the inferior meatus. The latter point is of some importance, as although the patient may be able to breathe fairly well through both nostrils, the inferior meatus may still be more or less completely blocked, and the stream of air consequently compelled to pass through the upper channels, and thus not flow, as it should normally do, over the Eustachian orifice. If the parts are fairly large, the passage moderately straight, and the light good, the posterior wall of the pharynx and Eustachian orifice can be seen; and on asking the patient to swallow, the rising of the palatal cushion can be observed, and at times, though much more rarely, the movements of the salpingo-palatine and salpingo-pharyngeal folds. When the movement of the palatal cushion can be thus distinguished, the fact that there is no obstruction in the inferior meatus is definitely established. As the parts, however, are frequently narrow or the meatus not quite straight, the converse does not hold good.

<sup>1</sup> R. Acid. carbol. gr. i., sodii bicarb., sodii biborat. ʒi. gr. ii., glycerine ʒi., aquam ad ʒi.

For more accurately examining the Eustachian orifice, Zau-  
fall's long funnel speculum may at times be useful; but it is  
only when the parts are fairly roomy that the largest size of these  
specula can be introduced without causing much pain and  
making the tissues bleed; and I confess that through the medium  
and small-sized specula I have never myself been able to obtain  
a view which is worth anything. Indeed, although I have used  
the funnels frequently in the out-patient room, I must say I  
have never found them of much service, either from a diagnostic  
or therapeutic point of view.

Of the nasal probe, all that need be said is that it is service-  
able for distinguishing hypertrophy from mere erection of the  
inferior turbinated body. Its uses for detecting necrosis, foreign  
bodies, and rhinolithes is too well known to require any com-  
ment.

*Posterior rhinoscopy* is always, to say the least, a troublesome  
procedure; although, since the introduction of cocaine, the  
difficulty arising from the extreme sensitiveness of the parts has  
been in great measure overcome. Where there is not room  
between the soft palate and the posterior wall of the pharynx,  
tying up the palate appears the best means of obtaining a view.  
This I still consider is best done by thin red rubber tubing, in  
the way described by me in the *Lancet* for July 28, 1883. Many  
now employ pieces of string with the ends stiffened in gum; the  
string, however, lacks the elasticity, smoothness, and softness of  
the rubber tubing, and is certainly not so cleanly.

*The examination of the naso-pharynx* should be done syste-  
matically, and not in a mere perfunctory or haphazard man-  
ner. The finger, presuming the right hand is used, should  
be first rapidly swept over the right Eustachian orifice, then  
carried forwards into the right choana, and the posterior end  
of the inferior turbinated body examined. It should then be  
passed over the septum into the left choana, thence to the left  
Eustachian orifice, and finally swept from left to right over the  
vault and back of the pharynx, investigating the condition of  
the adenoid tissue in that situation, and the pharyngeal tonsil.  
With a little practice such a systematic examination can be  
made in a few seconds, and it should always be done as quickly  
as possible, as it necessarily causes the patient considerable an-  
noyance. I constantly advise the students to accustom them-  
selves to the feel of the parts in their normal condition by prac-  
tising palpation of the naso-pharynx on the dead body. It is  
almost trite to say that one can hardly expect to detect morbid  
processes when one is not cognisant with the normal state of  
the parts.

THE CAUSES OF NASAL OBSTRUCTION may be divided into the *nasal* and the *naso-pharyngeal*, according as the seat of obstruction is situated in or chiefly confined to one or other of these cavities.

The *nasal*, again, excluding foreign bodies and rhinolithes, may be further subdivided into the *septal* and the *turbinal*.

THE SEPTAL include—1. Deviations of the nasal septum (spontaneous or acquired). 2. Dislocation of the septum from the superior maxillary crest. 3. Exostoses and enchondromata of the septum. 4. Tumours, other than cartilaginous and osseous, of the septum. 5. Hypertrophy of the tissues of the septum. 6. Abscesses, gummata, and periostitis of the septum. 7. Hæmatoma or blood-tumour of the septum.

THE TURBINAL OBSTRUCTIONS may consist in—1. Erection or turgescence of the turbinated bodies. 2. Hypertrophy of the turbinated bodies (local and general). 3. Exostosis of the inferior turbinated body. 4. Necrosis of the inferior turbinated bone. 5. Polypi and other tumours growing from the turbinated bodies or recesses between them. 6. Adhesion of the inferior turbinated body to the septum.

The *naso-pharyngeal affections* that may lead to nasal obstruction are:—1. Adenoid vegetations in the vault of the pharynx and about the choanæ. 2. Hypertrophy of the pharyngeal or Luschka's tonsil. 3. Naso-pharyngeal polypi and tumours. 4. Outgrowths from the cartilage of the Eustachian tube. The obstruction arising from ordinary acute catarrh, the common cold in the head, and from tumours of the antrum encroaching upon the nasal cavities, is not included in this classification.

## I. INTRA-NASAL OBSTRUCTION.

### A.—*Septal obstruction.*

I. DEVIATIONS OF THE SEPTUM may be divided into the acquired and spontaneous.

1. *The acquired deviations* are the result of an injury to the nose, and are generally, though not invariably, attended by some deflection of the lateral nasal cartilages, and sometimes also of the nasal bones. The deviation may be limited to the cartilaginous portion of the septum, or it may involve to a greater or less extent the vomer, and the perpendicular plate of the ethmoid as well. The deviation may consist in a simple bulging to one side with a corresponding depression on the other; or the septum may be bent in a sigmoid manner, a projection



occurring in one nostril in front and below, and a second projection in the other nostril a little higher and farther back. In simple cases of deviation, where the bending is very slight, and the breathing in consequence is but little interfered with, the condition may often be remedied by the use for a short time of some form of plug or other dilating apparatus, such as nasal bougies, laminaria tents, &c. Or if these fail, or the deviation is somewhat more severe, the straightening may be accomplished by forcible rectification with suitable forceps. In some instances, however, where the deviation is confined to the cartilaginous portion, the cartilage is so resilient that the deviation returns soon after the rectification; for such, a portion of the cartilage had better be shaved off before the straightening is attempted, or the septum must be literally comminuted with the forceps or divided in a stellar manner. The choice of operation in such instances must necessarily be determined by the nature of each individual case. When the bony septum is involved in the deviation, the projecting part may be forced into position by the forceps, taking care not to injure the superimposed mucous membrane, and will then, if retained in place by suitable retentive apparatus, generally consolidate in its centrally placed position. The deviation is sometimes so great that the forceps cannot be insinuated on one side of the septum. In such cases the forceps contrived by Mr. Thomas Smith may be of service. In these the blades are separable, like midwifery forceps, so that each blade can be introduced alone, and locked when in position. Or a portion of the projecting septum may be removed by the nasal saw, as described under "exostosis of the septum" (page 126). Wherever the straightening is accomplished by forcible rectification, some form of retentive apparatus is usually requisite for a few days to prevent the parts resuming their faulty position. These, however, need not be here described, as they are now kept in stock by all the instrument-makers.

2. *The spontaneous deviations.*—Few septa are absolutely straight, and some amount of deviation is present in most noses. Such, however, should of course not be regarded as pathological conditions. It is only when the deviation is sufficient to interfere with efficient nose-breathing or causes some palpable obstruction that any treatment is called for. One of the chief differences between the spontaneous and the acquired deviations is that the former are frequently associated with a thickening of the bone or cartilage, forming pseudo-exostoses or enchondroses on the prominent side. It is in these cases that the best results are obtained by the nasal saw (see treatment of exostosis). Where the deviation is so marked that the saw cannot be placed



in position, a way for it may often, with advantage, be secured by the use of the nasal drill.

In all of these operations on the septum there is very smart hæmorrhage, and it is as well, in order to prevent the blood as much as possible from passing backwards through the posterior nares into the throat, to plug the nostril behind the seat of operation. Where the obstruction is not very great, this may be done by simply passing a pellet of cotton-wool, secured to a stout string, or better a thin wire (as the string is apt to be cut during the operation, and the plug may thus get pushed into the throat), beyond the obstruction. Notwithstanding plugging, however, some blood, often a considerable quantity, will find its way into the throat, and is generally vomited after the completion of the operation. I have never had any pass into the larynx, but it is always well to be provided with a good gag, pharyngeal forceps, and sponges on long handles in case of any emergency. After the operation the bleeding very quickly ceases, and it has never been necessary in any of my cases to plug the nares. Spraying with cocaine, in that this drug causes paling of the mucous membrane from emptying of the vessels, as well as local anæsthesia, may be employed before the operation. In the way of after treatment, beyond anointing the parts with vaseline, and subsequently keeping them clean by gently syringing with some mild and non-irritating antiseptic solution (which should always be warm), no active treatment is generally called for. The temperature, however, frequently rises on the second or third day, and frequently some catarrhal inflammation about the fauces supervenes. This, however, has always rapidly subsided, and calls for no special treatment.

II. DISLOCATION OF THE SEPTUM FROM THE SUPERIOR MAXILLARY CREST AND ANTERIOR NASAL SPINE is of very frequent occurrence, both as the result of a former injury to the nose and as a spontaneous affection. In traumatic cases there is generally some deviation of the lateral cartilages to one or other side. The spontaneous affection may occur as a congenital malformation, or it may supervene, or at least become more marked at or about the time of puberty. Its occurrence at puberty, I believe, may be explained as follows:—At puberty, as pointed out by Mr. Hilton, the nose enlarges considerably in all directions. The increase in the size of the vomer, he says, causes the perpendicular plate of the ethmoid, and with it the septal cartilage, to be carried as it were forwards and upwards, along with the external plate of the frontal bone, which is connected through the nasal spine of the frontal and the nasal crest of the nasal bones with

the perpendicular plate of the ethmoid. If from any cause the expansion of the frontal cells and the maxillary crest should not proceed commensurately with the forward growth of the vomer, it is clear that the septal cartilage would be compressed between these bony points, and must either bend to one or other side, or its anterior end, which is more loosely attached, be dislodged from the nasal spine. Be this as it may, there is no doubt of the fact that dislocation, or at least an increase in displacement of the septal cartilage from the crest and spine, does frequently occur at this time. The dislocated cartilage gives rise to a red prominence just within the vestibule, and on raising the ala of the nose, and slightly pressing it, the free edge of the dislocated cartilage is very clearly seen. In some of these instances the crest itself is also more or less tilted over to the dislocated side, and in some instances again may become increased in thickness, forming a veritable exostosis. This, when extreme, may with the dislocated portion almost completely, or indeed completely, obstruct the passage. In all cases the prominence has a very unsightly appearance.

In those cases in which there is a simple dislocation of the cartilage, and the projecting portion is just within the meatus, the best treatment is to cut away the projecting piece. This may be done by reflecting a triangular-shaped flap of the mucous membrane and then making the cartilage prominent by pressure on the opposite side of the nose, cutting it away with small bone pliers or strong curved scissors. In doing this, care should be taken not to leave a blunt angle, as this will then have a tendency to form a prominence under the reflected flap of mucous membrane and may require a subsequent operation, but to shave it off in a shelving manner, so that when the mucous membrane is laid down over it a level surface may remain. Where the spine or crest also projects into the nostril on the dislocated side, it may either be fractured and forced into position with the nasal forceps, or a further flap of mucous membrane may be reflected from it and the offending portion cut away with bone forceps, or, better, with the nasal saw. Again, when this deflected portion of bone has become thickened and has assumed the proportions of an exostosis, it should be shaved off level with the rest of the septum and maxillary crest by the nasal saw. A suture or two may be applied to hold the reflected flaps of mucous membrane in position, but they are quite unnecessary, as the flaps, in consequence of the very abundant blood-supply of the parts, rapidly adhere to the raw surface, and healing of the wound is generally complete in a few days. Further, by not uniting the flaps all risk of tension and inflammatory action with suppuration is

avoided. Beyond keeping the parts clean by occasionally spraying them with a weak alkaline lotion, no after treatment is required. At times, however, where the projection extends for some little distance from the vestibule, the insertion of a hollow plug for a few days after the operation will be found of some advantage.

III. EXOSTOSIS AND ENCHONDROSIS OF THE SEPTUM.—Outgrowths from the cartilaginous septum and bony projections from the vomer are particularly common, but do not necessarily give rise to any inconvenience. One of the most frequent forms in which cartilaginous or bony outgrowths occur is that of an oblique ridge running upwards and backwards from near the anterior nasal spine, *i.e.*, in the line of junction of the vertical cartilage with the vomer. In these instances the projection may consist in part of cartilage and in part of bone, and may affect both sides of the septum, though, perhaps, it is more often limited to one side, or affects more markedly one side than the other. The outgrowths are frequently associated with some amount of deviation of the septum. I believe that in this situation they are due to excessive growth at the ossifying margin of the vomer, and that they are formed in a similar way to the enlargement of the epiphyses in rickets. I am not sure that they may not be a manifestation of rickets, but on this point I should not like at present to make a definite statement. In other instances there may exist an exostosis or enchondrosis on the upper part of the septum on one side encroaching upon the upper air-space, and an enchondrosis, or even exostosis, on the lower and opposite side of the septum, which then protrudes into the inferior meatus. It must be well understood, however, that it is only when these outgrowths have attained any size or are associated with an hypertrophied condition of the turbinated bodies, or the septum itself is also slightly deviated, that they give rise to symptoms or call for surgical interference. They must not be confounded with the tubercle of the septum, which consists of a thickening of the mucous membrane, and exists as a rule on both sides of the partition. This tubercle, it is believed by Dr. Baber, may become temporarily swollen, like the inferior turbinated body, though he has not been able positively to verify the fact. Unlike an osseous or bony growth, it is soft, and can be dimpled with the probe and pushed somewhat aside. It is not always present, and in other instances is so large as to hide part of the turbinated bodies.

Cystic degeneration is said to be common in the enchondromata, and ulceration of the mucous membrane covering the growth to occasionally occur. I have not, however, myself observed



either condition. Dr. Woakes speaks of exostoses affecting the posterior part of the vomer, but such have not come under my observation. Treatment should only be undertaken when these growths are productive of permanent nasal obstruction. They may be removed by the saw, gouge, or cutting forceps in the case of both exostosis and enchondrosis, also with the galvano cautery in the case of the latter. I have usually employed the saw. Both for enchondrosis and exostosis the blade should measure about an inch in length,  $\frac{1}{8}$ th of an inch in depth, and  $\frac{1}{16}$ th of an inch in breadth along its cutting edge, tapering off at the back to  $\frac{1}{32}$ nd. The blade is attached to a long delicate stem, which is mounted on a firm handle. At the Hospital I have had the stem of the saw so constructed that it can be attached to the surgical engine. For the enchondroses, especially those near the anterior part, nothing answers better than shaving them off slice by slice with a sharp probe-pointed tenotome till the growth has been sufficiently reduced. Granulations rapidly spring up over the raw surface, and healing, as a rule, is quickly accomplished. When just within the vestibule, a flap of mucous membrane may be dissected up previously to slicing away the redundant cartilage. But almost, or perhaps quite as good results ensue when the mucous membrane is removed with the growth. It is recommended by some surgeons to perforate the cartilage with the galvano cautery in one or more situations, in which way it is said they can be destroyed with less breach of surface, and that healing subsequently more rapidly ensues. I have found, however, removal with the saw and knife answer so well that I have not tried this method.

IV. NEW GROWTHS OTHER THAN CARTILAGINOUS AND OSSEOUS OF THE SEPTUM are very rare. I cannot remember having met with such in my own practice, or seen them in the practice of others. For this reason no further mention of them will be made here.

V. HYPERTROPHY OF THE TISSUES OF THE SEPTUM is occasionally met with. The thickening may be limited to one side, or may be bilateral. This condition is at times more or less confined to the posterior part, and can then only be detected by posterior rhinoscopy, or with the finger behind the palate. The mucous membrane on either side of the septum then appears swollen and oedematous, forming when bilateral two palish, oval, cushion-like prominences, which are elastic to the probe, and more or less block up the choanæ, and perhaps project through them. The pale appearance of these swellings strongly contrasts



with the general reddish colour of the rest of the mucous membrane. This condition gives rise to symptoms similar to those produced by nasal polypi far back, or retro-nasal catarrh with which affection it appears to be frequently associated. It has been recommended to puncture the swellings or tear part of them away with forceps, but the best results are obtained by the application of the post-nasal galvano cautery, or by the galvano cautery passed through the nose cold, and then heated when it has been placed in position by the finger behind the palate. Unless the naso-pharynx is roomy, and the patient's throat well tolerant to the mirror and his nose to the passage of instruments, it is best to perform the operation under an anæsthetic. This must certainly be done if the finger is employed to guide the wire loop. Cocaine should, of course, be used if the operation is attempted without chloroform.

VI. ABSCESSSES, GUMMATA, AND PERIOSTITIS OF THE SEPTUM.—Abscesses are sometimes met with after injury or from the breaking down of a hæmatoma. The inflammatory signs accompanying them will usually with the history of the case serve for the diagnosis. I once, however, met with a chronic abscess in this situation, in which there was no satisfactory account of traumatism. Puncture with a grooved needle sufficed to determine its nature, and an incision was all that was necessary in the way of treatment. It was not a broken-down gumma. Gummata are of syphilitic origin, as is usually periostitis when it affects the septum. Gummata may occur on one or both sides of the septum. They are at first hard, but softening as a rule soon sets in, and necrosis and perforation of the septum frequently result. The history of syphilis and the presence of concomitant signs of that affection, together with an account of the way in which the swelling began and the effect of remedies, should serve for the diagnosis. Periostitis of the nasal bones is not infrequently associated with the septal affection. Iodide of potassium should, of course, be given internally, whilst locally cleansing sprays should be copiously employed. The offensive smell attending the necrosis may be controlled by Cargill's respirator adapted to the nose. This respirator, which is also very useful in necrosis of the jaw, is so constructed that the air has to pass through an antiseptic and detergent fluid. The following is the formula used at the Hospital:—R. Iodine grs. iii., creosote ℥i., carbolic acid ℥ii., ether ℥ii., rectified spirit, ℥iii.

VII. HÆMATOMATA, OR BLOOD-TUMOURS OF THE SEPTUM.—Two or three examples of these have come under my observa-

tion during the last few years in patients suffering from impeded nasal breathing. They are said to be generally associated with a fracture of the septum. Such, however, was not discovered in the above cases. They may be unilateral or bilateral. The rounded, oval, soft, and fluctuating swelling to which they give rise, with the history of a blow or other injury of the nose, usually makes the nature of the obstruction clear. The absence of inflammatory signs distinguishes them from abscess. A puncture with a fine needle will clear up any doubt. Those I have seen have become absorbed with time, except in one instance where suppuration threatened, and in this the swelling was laid freely open. Healing rapidly ensued.

*B.—Turbinal obstruction.*

I. ERECTION OR TURGESCENT OF THE INFERIOR TURBINATED BODY must be distinguished from hypertrophy, a condition which it somewhat resembles, and with which it may be confounded on a superficial examination. The diagnosis, however, can be readily made by spraying or swabbing the part with a four per cent. or stronger solution of cocaine, which drug possesses the power of forcing the blood out of the erectile tissue. As some patients appear to be very susceptible to the action of cocaine, the drug, it need hardly be said, should be employed with caution. The diagnosis can also be made by means of the nasal probe. In simple erection the probe causes a dimpling of the succulent mucous membrane, whereas in hypertrophy the probe produces very slight, if any, indenting of the hypertrophied tissues. Moreover, in mere erection the anterior end of the inferior turbinated body appears smooth and shining, but in hypertrophy, as a rule, slightly granular or lobulated, and somewhat irregular in its general contour. This erection or turgescence of the inferior turbinated body, which has only been recognised and distinguished from hypertrophy during the last few years, may, like hypertrophy, affect the whole body or be confined to the anterior or posterior end. Erection within moderate limits is no doubt a physiological phenomenon, and occurs temporarily as a protective to the respiratory tract, as in the sudden inhalation of cold air or irritating vapours, and may also be produced at times by touching the body with the nasal probe, the contact with cold sprays, &c. It is only when the erection is extreme, and the tissues lose their tone, and the condition hence becomes of a more permanent nature, that it is liable to cause serious symptoms of nasal obstruction. The circumstances which may lead to this more permanent condition of erection are not thoroughly understood; but polypi in the

deeper recesses of the nose and chronic catarrh are undoubtedly at times concerned in its etiology. For the temporary erection occurring in acute catarrh, the breathing of cold air, &c., of course no local treatment is necessary. Where, however, it has become of a more permanent nature, and is productive of obstruction to free respiration through the nose, means must be taken to overcome it. In the first place, any cause, as the presence of a polypus, foreign body, or rhinolith, must be removed, whilst appropriate remedies must be employed for the abatement or cure of any catarrhal state that may be present. For reducing the erection, compressed sponges soaked in solutions of cocaine hydro-chlorate (20 per cent.), in the way recommended by Dr. Cohen, may be employed; whilst subsequently the compression of the turgescient tissues may be continued by the passage of laterally flattened laminaria tents. At times puncture, as recommended by Dr. Woakes, may have a beneficial effect, or a point of the galvano-cautery wire may be passed in one or more places into the swelling, which in this way will become to a greater or less extent shrivelled up.

II. HYPERTROPHY OF THE MUCOUS MEMBRANE COVERING THE TURBINATED BONES may be limited more or less to the inferior body, or may involve the middle turbinated body, or the mucous lining generally. Hypertrophy of the inferior turbinated body must be distinguished from erection of its anterior end. This, which has already been discussed, is found to disappear on the application of cocaine, and will be further distinguished by its softness and dimpling when manipulated with the nasal probe. Hypertrophy of the inferior turbinated body may be general, or confined to one or other end, or to both, but is more common at the anterior end. The hypertrophy may affect one side only, or it may be bilateral. A unilateral hypertrophy is exceedingly common in cases of deviated nasal septum, the hypertrophy in such being usually situated on the concave side. Indeed, by Dr. Thudichum the deflection of the septum is attributed to the pressure of the turbinated body. In this view I do not concur, as in the great majority of deviated septa—I think I can say in nearly all of the cases that have come under my observation—there has been a distinct interval between the hypertrophied body and the septum on the concave side. It would appear rather that the hypertrophy of the turbinated body is the result of the deviation of the septum than the cause. Hypertrophy of the anterior end of the inferior turbinated body, which has at times been mistaken for polypus, may be readily distinguished from such by its pinkish red colour,



by its being continuous with the general mucous lining of the nasal chamber, and by the fact that a probe cannot be passed round it, as can be done in the case of a nasal polypus. Hypertrophy of the posterior end is, as far as my experience goes, much less common. It gives rise to an irregularly, coarsely, granulated tumour, projecting through, and indeed at times completely blocking up, the corresponding choana. Its appearance in the rhinoscopic mirror is very characteristic. Where a rhinoscopic examination cannot be obtained, the diagnosis can be made by passing the finger behind the palate, a method of examination which should not be neglected where there is any suspicion (on account of no satisfactory cause being discovered for the nasal obstruction on an anterior rhinoscopic inspection) of stenosis posteriorly. Of general hypertrophy there is a very good specimen, Series xii. No. 1762, in our Museum; it is figured in the article on the nose which I contributed to 'Treves' "Manual of Surgery." The treatment of hypertrophy of the inferior turbinated body will depend both on the extent and degree of thickening present. In those cases in which the hypertrophy is limited to the anterior end, I have met with the most success by excision. This is perhaps best done by the galvano-cautery wire. The parts having been painted with a 20 per cent. solution of cocaine, and a Goodwillie's ivory speculum introduced to protect the septum, a hare-lip pin is made to transfix the hypertrophied portion, and the wire loop of the cautery passed over the pin. In this way the slipping of the wire is prevented as the loop is tightened. Little or no bleeding attends the operation, and the patient, as a rule, experiences perfect relief. No further treatment beyond anointing the stump of the turbinated body with vaseline is commonly required. The removal of the posterior end is attended with more trouble, since it is difficult to prevent the wire loop slipping off the enlarged end, as here a hare-lip pin cannot of course be employed. This operation is best done with the patient under chloroform, as the necessary manipulation of the finger behind the palate in passing the loop over the excrescence may be prolonged. A gag is essential for keeping the mouth open. The wire should not be heated too quickly lest hæmorrhage ensue, and it is as well, after the loop has been placed *in situ* and tightened, to take hold of the part to be removed with suitably curved post-nasal forceps, to prevent it dropping back into the pharynx. If the galvano-cautery is not at hand, the amputation may be done with Jarvis' cold-wire snare; but if this is employed, the wire must be strong, as otherwise the loop is liable to break on screwing up the instrument, and hæmorrhage may ensue from the very vascular



and half-severed tissue. Further, the screwing up, in order to avoid hæmorrhage, should be performed slowly.

In general hypertrophy of the inferior turbinated body the application of the galvano-cautery, or in some cases the partial or complete removal of this structure, is the best treatment. In slighter cases the use of glacial acetic acid, nitric acid, or chromic acid may suffice. If these are employed, previous spraying with cocaine is essential, as their use is attended with considerable pain. Nitric acid, though efficient, is objectionable on account of the nitrous fumes which it gives off. If, notwithstanding the preliminary spraying with cocaine, pain is experienced after the application, it can at once be arrested by sniffing up from the palm of the hand a small quantity of Dobell's solution. In applying the galvano-cautery I have found it expedient not to destroy too much of the hypertrophied tissue at one sitting, the method I have usually adopted being to draw the platinum point two or three times along the turbinated body in parallel lines on each occasion.

The removal of the turbinated body may be complete or partial, but as the partial removal will in many instances suffice for clearing the passage, this operation, in my opinion, is the one which should be first employed. A partial excision may be conveniently done with Woakes's forceps and nasal plough, as in this way the amount of tissue that is to be amputated can be more accurately estimated. These forceps consist of narrow serrated blades with the handles fixed at the proper nasal angle. The portion of the body to be extirpated is seized with the forceps, and the blades fixed by a catch on the handle. The plough, composed of a "kind of gouge, a portion of the cutting surface of which is curved upon itself, while the rest projects forwards keel-wise and ends in a blunt point," is pushed along through the tissues on the outer side of the forceps beneath the turbinated body till it reaches the naso-pharynx, and the excised portion comes away with the forceps. The complete removal may be done with the nasal scissors, several varieties of which have been contrived for the purpose.

III. EXOSTOSIS OF THE INFERIOR TURBINATED BODY.—I have not often met with this condition myself, although it is said not to be very uncommon. Distinct outgrowths are described as occurring from any part of the bone, but especially from about the middle. In severe cases the exostosis is said to come into contact with the septum and cause complete blockage of that side of the nose. Irregularities in the conformation of the bone are not so uncommon, but such should not be regarded as exos-

tos. They are diagnosed by inspection and the passage of the nasal probe. Removal is the proper treatment.

IV. NECROSIS OF THE INFERIOR TURBINATED BONE is an occasional though rare cause of nasal obstruction. I have only met with two instances of it. The condition is readily detected with the nasal probe. In one of the cases to which I refer, that of a gentleman in our profession, the bone was quite loose, and from the history of the case had probably been dead for some years. It came away quite readily with the aid of the forceps, and along with it, two or three small seed-like bodies were removed. There was no history of syphilis. The mucous membrane covering the bone was considerably swollen. There was no smell whatever, and none had been previously noticed.<sup>1</sup>

V. NASAL POLYPI.—Little need be said of these as a cause of obstruction of the nares, further than to advocate their removal by the galvano-cautery, a method I have invariably employed during the last six years. The advantages of the galvano-cautery snare over the forceps are that the polypus can be removed more completely and with less annoyance to the patient, whilst there is little or no hæmorrhage, and practically hardly any pain. The absence of bleeding allows of the parts being seen during the operation, and of each polypus being completely eradicated, and its base, if any is left, destroyed by the cautery, and not merely seized and dragged off in the rough and haphazard manner, as in the employment of the ordinary polypus forceps.

VI. ADHESIONS OF THE INFERIOR TURBINATED BODY TO THE SEPTUM.—In cases in which there is hypertrophy of the inferior turbinated body or much deviation of the septum, or in which both of these conditions are present, the inferior turbinated body may become adherent to the septum, and thus cause very serious or complete obstruction to the passage of air on the affected side. The adhesion may be brought about simply by long-continued pressure of the parts mutually on each other, or in consequence of some abrasion, or even ulceration, of the contiguous surfaces. At times band-like adhesions may be found stretching between the turbinated body and the septum. The diagnosis of this condition is readily made by the nasal probe. The treatment consists in breaking down the adhesion with a director, or, if necessary, with a narrow scalpel or delicate bone pliers, and

<sup>1</sup> In another case which came under my care since this paper was written, there was also no smell, although from the history the bone had probably died some years before.

then in correcting the deviation of the septum or removing a portion of the turbinated body in one of the ways above indicated. When a distinct band of adhesion is present, it should be divided and a portion removed.

## II. NASO-PHARYNGEAL OBSTRUCTION.

I. ADENOID VEGETATIONS IN THE VAULT OF THE PHARYNX AND ABOUT THE CHOANÆ are now so well recognised as a cause of nasal obstruction and middle-ear disease, that they call for little remark. They seldom, however, except in children, give rise to signs of nasal obstruction, although I have known them productive of aural trouble in adults. The symptoms, namely, the peculiar dead tone of voice, the half-open mouth, and consequent vacant expression of the child, the contracted nares, the frequent concomitant nasal catarrh, the noisy respiration during sleep, and the gradually increasing deafness, are now so well known that they need not be further dilated upon here. A somewhat full account of them is given in an article I contributed to Heath's "Dictionary of Surgery," and in a paper by Mr. Butlin in last year's Reports.

A less well-known symptom, but one of some value, is that to which Dr. Spicer has recently called attention in the *Lancet* for August 1887, viz., the enlargement of the transverse nasal vein at the root of the nose. This symptom, though frequent, is not a constant phenomenon. It may, however, be present in cases of adenoid vegetations, where the usual signs of the affection are absent, *i.e.*, in cases in which the "vegetations are not large enough to cause obstruction to the passage of air to the naso-pharynx," and "being small and high up in the post-nasal space, only cause pressure over the sphenopalatine foramen," whereby "additional blood is thrown into the anterior and superior drainage systems, causing congestion and distension of them, which is visible anteriorly where the vein is superficial and the skin thin, as at the root of the nose." An accurate diagnosis, however, can only be made by a posterior rhinoscopic examination, or, better, with the finger behind the soft palate. The fringe-like appearance of the growths overhanging the choanæ, and the soft, velvety, pulpy sensation to the finger, when once seen and felt, are afterwards readily recognised.

Removal of the vegetations in the great majority of cases is imperatively called for, since although they may undergo atrophy as the patient advances in age, or cease to do any harm as the naso-pharyngeal space enlarges commensurately with the growth of the child, there is danger in the meantime of serious,



and often irreparable, middle-ear disease being set up, and the dead tone of voice which has been acquired may be very difficult to overcome. The vacant expression of the countenance is also a serious detriment to the comfort of a child, especially if a boy; whilst, lastly, the chronic nasal catarrh depending upon their presence may become chronic, and even intractable.

With regard to the removal of these growths, opinions differ as to whether they should be completely extirpated at one operation with the child under chloroform, or removed piece by piece at several sittings. I have myself invariably employed the first method, since in this way they can, with the child under chloroform, be more effectually and thoroughly dealt with; there is less danger of injuring the Eustachian tube, septum, &c., and the child is saved the continual dread and anxiety of yet another operation. It is said by the supporters of the gradual method that complete extirpation is attended with the danger of acute catarrh of the middle ear, as well as of the blood escaping into the larynx whilst the patient is under the anæsthetic. This danger, to my mind, is chimerical, and I can only say that I have now operated on a very considerable number of cases without any ill effects of the kind having happened. I venture to think that if the patient is kept warm and in bed for a few days after the operation, no ear trouble need be apprehended. A great number of different instruments have been devised. I have nearly always myself used Meyer's ring-knife for clearing the cartilage of the Eustachian tube, and Loewenberg's forceps for eradicating the larger growths. These forceps, however, are rather too large and clumsy for very young patients, nor do they readily sever the larger growths. They have been improved to some extent for me by Messrs. Arnold & Son, by being made smaller and more delicate, and in having the curve slightly modified, and the cutting blades made to overlap a little in place of merely meeting together, whilst at the same time the blade is prolonged somewhat downwards posteriorly to enable the operator to deal with the growths on the posterior wall. The smaller pendulous growths hanging over the choanæ are best scraped off with the finger-nail; or, if preferred, may be removed by Dr. Capart's finger-sheath with cutting-spoon. But the finger alone is not only itself sufficient, but is better adapted to the shape of the parts than any instrument hitherto devised.

II. HYPERTROPHY OF THE PHARYNGEAL TONSIL is much less common as a cause of nasal stenosis than is the presence of adenoid vegetations, with which condition, however, it occasionally co-exists. Whilst demonstrator of anatomy, I had several



opportunities of examining this structure in its hypertrophied condition in subjects brought to the rooms for dissection, and can confirm Luschka's description of it. In the living subject it may be detected either by the rhinoscope, or better by the finger passed behind the soft palate. In the former, it appears as a smooth mass consisting generally of two lateral and more or less symmetrical halves; it occasionally has a tri-lobed appearance. When the hypertrophy is considerable, it not only causes more or less obstruction to the free passage of air through the nares, but may also press upon and obstruct the Eustachian orifice. The symptoms are similar to those of adenoid vegetations. At times there is bleeding. In such cases the blood may trickle down the pharynx, causing irritation of the larynx, and be coughed up, simulating hæmoptysis; or it may be assumed to come from the back of the nose. In any case of doubt, the naso-pharynx should be examined with the rhinoscope and finger. The treatment consists in removing the growth by forceps or a sharp spoon. If Loewenberg's forceps—perhaps the best instrument—is used, the cutting edge of the blades should be prolonged posteriorly. The spoon may consist of a cup with sharp edges like a Volkmann's spoon, mounted on a long and properly shaped handle.

The operation is best done under an anæsthetic. Although the bleeding is sharp, as far as I know it has never been attended with serious consequences.

III. NASO-PHARYNGEAL POLYPI call for no special comment here, either as regards their diagnosis or treatment, further than that when small they are apt to be overlooked, unless a rhinoscopic examination or a systematic exploration of the naso-pharynx be made. In a case recently under my care, obstruction to nasal respiration only occurred during expiration. Inspiration was free. This symptom depended on the growth, which was small, falling into the choana in a valve-like manner during expiration, but flapping back into the naso-pharynx during inspiration.

IV. OUTGROWTHS FROM THE CARTILAGE OF THE EUSTACHIAN TUBE are very rare. I have not met with a case.

# VARICOCELE, ITS ORIGIN IN A PERSISTENCE OF FŒTAL VEINS.

BY

W. G. SPENCER.

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Surgical authorities give a long list of anatomical causes for varicocele, but end by expressing dissatisfaction. "It would be contrary to all the teaching of teleology that an anatomical arrangement such as this should produce and cause disease" ("Holmes' System," vol. iii. p. 567).

Mr. Gould, in the "Clinical Society's Transactions," vol. xiv., and in "Heath's Dictionary," article "Varicocele," suggests a true venous hypertrophy, coming on at puberty. But the only new growth of a vein-wall observed consists of cavernous tissue, which is not the structure of the veins in varicocele, and if the vein-walls are thickened, it is secondary to the dilatation from some other cause.

The veins are very large during early life, for the spermatic or pampiniform plexus in the adult represents the veins of the Wolffian body in the embryo, just as the epididymis and vas deferens are descended from the Wolffian body itself; the venous plexus in the broad ligament, the hilum of the ovary, and the parovarium with its duct, have an analogous origin in the female.

In the second month of embryonic life the testis, a pale mass, is seated immediately upon the front of the Wolffian body, the Wolffian body itself being much redder than the testis from its greater vascularity (W. Mitchell Banks on the Wolffian body, Thesis, Edinburgh, 1864), and the part of the Wolffian body on the front of which the testis rests can be traced onwards to form the epididymis.

Four to six small arteries from the posterior vertebral artery on each side supply the Wolffian body, and extend through it to the testis. When the posterior vertebral vessels have united,

these arteries arise from the aorta. The relatively large veins emerge from the Wolffian body to join the posterior cardinal vein. The veins can be also seen in a transverse section of the Wolffian body by the microscope. The vena cava appears later on, and the middle portions of the posterior vertebral veins disappear. The veins from the portion of the Wolffian body which remains as the epididymis unite to form the spermatic vein. The veins from the epididymis, in mid-embryonic life relatively large in number and size, gradually atrophy in the older fœtus and the infant, until they form the normal spermatic plexus. But the spermatic vein of the adult shows in its anatomy evidence of its origin and of its developmental connections. It arises by numerous branches from the substance of the testis, which pierce the median surface of the epididymis. These pass, with other veins from the epididymis itself, to form the spermatic plexus. This consists of five or six smaller or larger vessels, which frequently anastomose. On entering the abdominal cavity, the plexus is reduced to two or three branches, which surround like a net the spermatic artery, and higher up unite into a single vein. Branches are received from the peritoneum, ureter, and fat around the kidney (Henle).

We know that the spermatic plexus is of relatively large size in the fœtus. A gap then exists in our knowledge until puberty is reached. A spermatic plexus then meets us in a class of clinical cases, occurring in otherwise perfectly healthy young men. There is no sign in them of abdominal obstruction; they have not suffered particularly from constipation and an overfull sigmoid flexure. There has been no over-physiological action of the testicle. Indeed, their energy prompts them to an active life, and they seek admission into the army, navy, or police. The varicocele has previously received from them scant attention, but as far as they have noticed anything, it has been present for some considerable time previously, increasing a little of late.

If we suppose that instead of the complete involution during early life, some of the large veins of the plexus remain still patent, but collapsed, in a potential state so to say, then towards puberty the natural conditions due to the increasing vascularity, and the increasing length of the spermatic vein with its contained column of blood, may tend to dilate these collapsed but still patent veins. Here, then, would be an origin of the varicocele, not in any anatomical condition, but as a result of the natural conditions obtaining at puberty, acting on persistent fœtal structures. This would not only explain the varicocele occurring in healthy men, but also the smaller varicocele in debilitating conditions, such as phthisis, or following pathological

changes in the testis. Either of these two conditions might dilate veins previously in a collapsed state.

The gap in the argument is evident. Persistent veins have not been described in boyhood, so far as I can learn, but neither can I learn that they have been especially looked for. The object of this paper is to direct attention to the probability that they may be found. Post-mortems on boys between four and ten are not at all common, but I would ask those who have such opportunities to examine the scrotum. It will then be seen whether, in anything like the proportion of varicocele in men after puberty, *e.g.*, in the conscripts of the Continental armies, partially patent veins are to be found exceeding the normal in amount, and whether these can be dilated by injection at a pressure not exceeding in force the weight of the column of blood in the adult spermatic vein.

Why fœtal structures should persist in one case and not in another, why a dermoid cyst should occur in one person and not in another, it is impossible at present to say.

Other diseases and malformations of the testis appear to occur in about an equal proportion on the right as on the left, although in many records the side of the tumour or disease is not mentioned; but varicocele is very much more frequently on the left than on the right. There are four developmental peculiarities on the left side as compared with the right which may or may not be connected with this frequency of varicocele.

1. There is a somewhat greater energy in the development of the abdominal structures: the kidney is heavier; so is the testis, and it descends earlier on the left.

2. The arch of the aorta persists on the left side. At first there is a posterior vertebral artery on each side, which unite later to form the abdominal aorta, whilst the right arch forming the commencement of the right posterior vertebral decreases, and the left arch increases. It may be that whilst the left arch is thus waxing and the right waning, the arterial supply is for a time greater on the left side, until the fully-formed median aorta equalises the circulation.

3. The vena cava is only formed on the right, so that whilst the right spermatic vein joins it directly, the left spermatic has to join the left renal, and cross the vertebral column.

4. The embryo turns and lies constantly on its left side.

In conclusion, I mention the remark by Curling<sup>1</sup> that a varicose dilatation of the veins of the ovary in the female is nearly always confined to the left side. This strongly confirms the developmental view as compared with the anatomical.

<sup>1</sup> Curling, *Dis. Testis*, 4th ed., 1878.





# NOTE

ON

## THE ASCENDING ANTERO-LATERAL TRACT.

BY

H. H. TOOTH, M.D.

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In a previous paper<sup>1</sup> I have described a case in which the spinal cord was cut across in the mid-dorsal region, and in which certain ascending changes were very noticeable. Among these was a small tract in the antero-lateral region or "mixed zone" (Flechsig). The credit of first drawing attention to this tract is due to Dr. Gowers, but it had undoubtedly been figured by other observers before him. They, however, appear to have regarded it as a part of the cerebellar tract. This is a mistake very easily made, because the anterior termination of the cerebellar is in many cases directly continuous with the antero-lateral tract. But in Dr. Gowers' original case the lesion was a crush of the lowest dorsal region, a point below the origin of the fibres which make up the cerebellar tract. Hence in his sections the cerebellar tract was absent altogether, and therefore the antero-lateral was particularly distinct. He has drawn attention again to this subject lately,<sup>2</sup> and gives drawings of a case of tabes in which the whole posterior region is sclerosed in the lower cord, but higher up, only the posterior median columns, and at the same time the ascending antero-lateral tract. He considers that the analgesia which sometimes exists in tabes dorsalis may be due to this lesion. Bechterew and latterly Sherrington have shown that this tract is composed of fibres which acquire their medullary sheaths at a definite time in the developing foetus. There is therefore abundant evidence, pathological as well as embryological, of the existence of this little bundle of fibres. The case

<sup>1</sup> A Contribution to the Topographical Anatomy of the Spinal Cord. Hospital Reports, vol. xxi., 1885.

<sup>2</sup> Gowers on the Ascending Antero-Lateral Tract. *Lancet*, 1886, p. 1153. See also Gowers' Diseases of the Nervous System, 1886, vol. i. p. 122.

I am now about to relate shows the antero-lateral tract so distinctly and so obviously separate from the cerebellar, that I have thought it worthy of record.

The clinical aspect of the case will shortly be discussed in the *British Medical Journal* by Dr. Harris, whose case it was, and to whose kindness I was indebted for permission to examine the cord.

The lesion consisted of a rapidly growing sarcoma, involving the membranes and compressing the cord from about the mid-dorsal to the mid-lumbar regions. That part of the cord involved in the tumour was completely disorganised and softened, as were also the lumbar and sacral regions. The upper dorsal region had been injured in taking out from the body, so that the only part available for examination by section was the cervical region, which was in excellent preservation.

The method employed, after hardening in potassium bichromate, was staining in the mass by Wegert's hæmatoxylin solution.

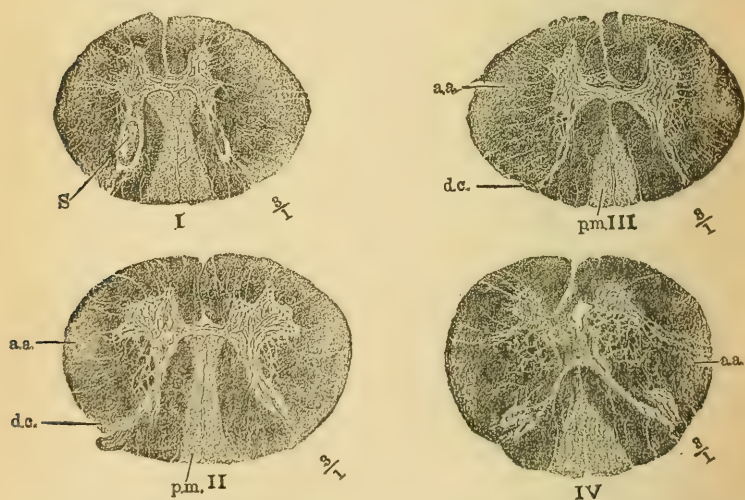


Fig. I.—About eighth cervical root. S. Secondary sarcomatous deposit.  
 Fig. II.—About fifth cervical. p.m. Posterior median degeneration. d.c. Direct cerebellar tract. a. Antero-lateral ascending tract.  
 Fig. III.—About second cervical.  
 Fig. IV.—Above first cervical.

Slices of the cord were washed very completely from the hardening solution and placed for four days in the hæmatoxylin; they were washed and kept for another four days in the potassium ferricyanide solution. After another careful washing, they were dehydrated and saturated with solid paraffin. Sections made in this way showed the degenerations very plainly.

Fig. I. is taken from a section at about the level of the eighth

cervical root. In this and all the cord sections, the degeneration of the posterior median columns, *p.m.*, stands out very distinctly. The peripheral degeneration is marked by a general faintness of the staining towards the edge of the section, which faintness stops, however, at the anterior median columns. This disposition of the degeneration near the lesion has been noticed by Dr. Gowers (*loc. cit.*), and, as he says, will probably account for some of the cases of so-called annular sclerosis in ascending degenerations, such as, for instance, is figured by Charcot in his work on the nervous system. In the left posterior horn of this section is a small secondary deposit of sarcoma (fig. I., *S*).

Fig. II., made at the level of the fourth cervical root, shows that both the cerebellar and antero-lateral tracts are completely differentiated, at least on the left side. It will be noticed that the cerebellar tract, *d.c.*, on the left side occupies the posterior third of the arc of the lateral columns, and is applied closely to the posterior horn, at which point it is broader than anywhere else, so that the tract has a comma shape, with head at the posterior horn. This is, in my experience, the usual shape and position of the direct cerebellar tract anywhere near the lesion. The farther away from the injury the section is made, the thinner is the tract, and the more it tends to approximate again to the antero-lateral tract, so that its fibres might be thought to be merged into and terminate in the latter tract. This, as I shall show below, is probably not the case. On the right side of this section the two tracts appear joined, and might easily be taken for one only.

At the level of the second cervical, fig. III., the cerebellar tract has disappeared nearly from its position, the last section being represented only by a very small strip of degeneration, *d.c.*, on the left side. The antero-lateral tract, *a.a.*, is large and distinct, and in its usual position.

In fig. IV., taken at a level rather above the first cervical root, the degenerated area seems to be flattening out, so as to approach again the posterior horns. It may be noticed here also that the posterior median degeneration is becoming broader at its base and shorter antero-posteriorly.

The ultimate fate of the antero-lateral tract is a point of considerable interest, more especially as there is every reason to believe, as we have before mentioned, that its fibres are concerned in the conduction of pain sensation. One of the latest researches in this direction is that of Loewenthal.<sup>1</sup> He does not recognise the existence of the antero-lateral tract as distinct

<sup>1</sup> Loewenthal, *Dégénération secondaires ascendante dans le Bulbe rachidien*, etc. *Rev. méd. de la Suisse Romande*, 1885, p. 511.



from the cerebellar, but his figures obviously include lesion of both tracts. His conclusions are the following:—That the degenerated area (including the two tracts in question), at a certain level in the medulla, presumably above the nucleus lateralis, or about the lower third of the olive, divides into two parts. One set of fibres passes into the restiform body and on to the cerebellum, probably to the upper worm. The other set of fibres passes up along the ventro-lateral periphery of the medulla into and through the pons to a point in the isthmus cerebri a little behind the corpora quadrigemina, where it bends back into the superior peduncle of the cerebellum. These conclusions Loewenthal arrived at by experiments on dogs, and therefore must be accepted with caution as applying to man. But it has been known since the time of Türk that some part, if not all, of the fibres making up the cerebellar tract get to the cerebellum by way of the restiform body. Flechsig, Singer, and others have confirmed and extended Türk's observation. We are here, however, more immediately concerned with the antero-lateral tract. In cases where both these tracts are affected, the combined areas of degeneration in the medulla above the pyramidal decussation are joined together in one comma-shaped area. The head of the comma is placed anteriorly, and corresponds with the antero-lateral tract, the tail being the cerebellar. As in the cord, the area is at the periphery of the section, the cerebellar part extending backwards outside the ascending root of the fifth nerve. This condition obtains till we come to a level in the medulla just below the olive, or a little above its lowest point; for the disposition of fibres and shape of the medulla vary very much in different individuals, even in health. Here the anterior part or antero-lateral element undergoes an almost sudden diminution of size, and in succeeding sections rapidly disappears, while the cerebellar element passes round posteriorly to appear in the restiform body. I have, unfortunately, only one section of the medulla in this case, the rest having been thrown away by mistake. This section, fig. V., is taken at the lowest part of the olive, but where the grey matter of the olive seems to be well marked. It is only with care that a few degenerated fibres can be made out in the position indicated by the letters *a.a.*

This observation coincides with that of Westphal,<sup>1</sup> a case of compression in the dorsal region with well-marked ascending degeneration. At the level of the lower olive he figures the antero-lateral and direct cerebellar tracts in one comma-shaped area, as described

<sup>1</sup> Westphal, Ueber eine Combination von secundärer Degeneration des Rückenmarks, etc. *Arch. für Psych.*, Bd. x., 1880, p. 788.

above. A little higher up the cerebellar element is seen in the restiform body, the antero-lateral remaining where it was; higher still the same tract is very small, evidently close on disappearing. One thing seems certain, viz., that these fibres do not pass to the cerebellum *via* the restiform body. What, then, becomes of them? There are two possible ways in which they may terminate. They may have passed into the central part of the medulla, and thus become lost in the mass of fibres forming the bulk of the formatio reticularis. In that case it would be scarcely possible to trace them farther. Or they may have become connected fibre by fibre with the numerous ganglion cells lying

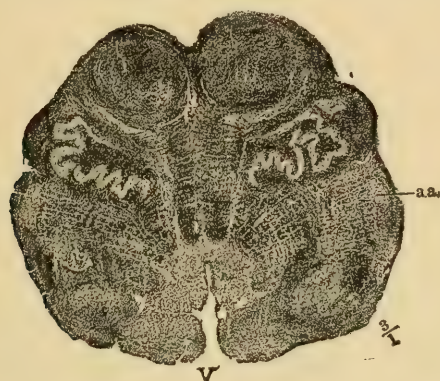


Fig. V.—Section of medulla at the lower third of the olive. *a.a.* The antero-lateral tract is represented by a very small remnant of degeneration. No cerebellar tract can be seen.

about in that part of the medulla, more especially with that group of them known as the nucleus lateralis. It should be remembered that the nucleus lateralis disappears at about the level of the middle olive in most individuals, and that the antero-lateral tract degeneration is certainly not to be found above, and generally ceases below that level. Now the nucleus lateralis is the remnant or upward termination of the lateral horn of the grey matter of the cord.<sup>1</sup> If we accept as possible the conclusion that this tract is ultimately connected with the cells of the nucleus lateralis in the medulla, there is no reason why its fibres should not be received from time to time in its upward course into the cells of the lateral horn of the cord lower down. Thus we have some sort of anatomical evidence that the grey matter of the cord is concerned in the conduction of pain sensations.

<sup>1</sup> Hill, A., The Plan of the Central Nervous System. Graduation Thesis for M.D. Camb., 1885. A very able morphological study.



# ON THE ASSOCIATION OF SUPPURATION WITH MALIGNANT DISEASE.

BY

HOWARD MARSH.

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I have lately met with several instances in which a malignant growth has been complicated by inflammatory action going on to suppuration, and, on the other hand, with two cases in which malignant disease was developed in tissues which had for some time been involved in suppuration. Such unusual combinations deserve, I think, to be recorded. Besides being noteworthy in their pathological aspect, they are important clinically, since they are likely to occasion serious mistakes and oversights in practice. But, by way of preface, I may refer to an allied subject, which, though it has no claim to novelty, will yet bear a passing notice. I mean the difficulty that occasionally presents itself of determining whether a given swelling depends on malignant disease or abscess. Two or three cases in illustration will be sufficient.

## CASE I.—*Sarcoma simulating Abscess.*

A child aged 9, in the Hospital for Sick Children, had a large swelling in the right loin, evidently connected with the kidney. It filled the space between the last rib and the iliac crest, and extended forward nearly to the outer edge of the rectus. It was smooth and rounded on its surface, and so soft and elastic on pressure, that to all but very careful examination it appeared to present well marked fluctuation. The physician in charge of the case regarded it as one of perinephritic abscess. The child's temperature ranged between normal and  $102^{\circ}$ . On the introduction of an exploratory needle connected with an exhausting syringe, nothing but blood was obtained, and the swelling proved to be a large sarcomatous tumour, connected, as a post-mortem examination six weeks later disclosed, with



the kidney. The fact that, although the case was one of malignant disease, the temperature was considerably raised, is alluded to at p. 160.

CASE II.—*Carcinoma of the Liver simulating Abscess.*

I was requested to see a man in one of the medical wards at St. Bartholomew's Hospital, suffering, as was believed, with abscess of the liver. He was 43 years of age, and had been a soldier long stationed in India. I found the liver considerably enlarged, so that it reached two inches below the ribs, and projected far down in the epigastric region. In this situation it formed a prominent swelling, which had exactly the appearance of an abscess that was pointing. It was very soft and yielding, so that it seemed to fluctuate, and the skin over it was dusky red. I had no suspicion that it was anything but an abscess, and I passed an aspirator needle into it. Nothing but a few drops of blood escaped, and it was subsequently demonstrated by post-mortem examination that the disease was cancer of the liver.

CASE III.—*Sarcoma of the Testis simulating Abscess.*

A man, aged 25, was under my care at St. Bartholomew's Hospital for an affection of the left testis, which he stated had followed a blow three months previously. The testis was somewhat larger than a duck's egg, globular, and smooth on the surface anteriorly, but behind irregular and hard, as if from inflammation of the epididymis. The skin over it was ruddy and thickened, as if loaded with effusion. The body of the testis was so soft and elastic that I thought I detected fluctuation. The cord was clear; there was no enlargement of the lumbar glands. On puncturing the testis, I found that only blood escaped, and it ultimately proved that the disease was malignant. A fortnight later I removed the gland.

In these cases the error of mistaking malignant disease for abscess arose chiefly from the fact that the tumour had, by breaking down, become so elastic that its elasticity was mistaken for true fluctuation. Such a mistake is no doubt still more likely to happen when not only has the tumour become softened, but when hæmorrhage has occurred into its substance. It may then be as diffuent as softened brain matter, and on manipulation its physical characters will be indistinguishable from those of a collection of fluid. Another source of error in Cases II. and III. was that the skin had become, as the disease approached the surface, dusky and altered, just as it is when matter is pointing.

In such cases as these there are three points, attention to which will generally obviate a mistake in diagnosis. First, although the most prominent part of the swelling is as elastic as a collection of pus, there are in many instances other parts in which a well-defined salient edge of the tumour, or even its distinctly lobed or nodular outline, can be detected—an outline sheer and abrupt, and quite unlike the gradual transition from inflammatory induration to healthy soft parts beyond. Secondly, although the first impression on handling the swelling is that it really fluctuates, a more critical examination will show that, however elastic it is, there is no true to and fro displacement in response to the alternate pressure of the fingers of the two hands—in other words, no true fluctuation. Thirdly, in a doubtful case no definite opinion should be ventured upon until the swelling has been explored with a tubular needle attached to an exhausting syringe. A very convenient instrument for this purpose is a large-sized hypodermic injection syringe.

*CASE IV.—Carcinoma of the Breast simulating Abscess.*

In a lady aged 34, who had been confined four months before, and who was still nursing her infant, the right breast became large, hot, tense, elastic, and painful, and the skin over it was ruddy and oedematous, as if occupied by inflammatory exudation. The surgeon who was attending the patient believed that an abscess was in course of formation, and ordered that the breast should be poulticed; and it was not till six weeks later (at about the time at which I first saw her) that the real nature of the case was declared by the appearance of numerous cancerous nodules in the skin, and the rapid enlargement of the axillary glands. The mistake here arose because all the circumstances of the case suggested the probability that the breast was the seat of an abscess, and, secondly, because, owing to the comparative youth of the patient, and the vascularity of the breast depending on lactation, the malignant growth was very active, and attended with great vascular disturbance, leading to redness and oedema of the skin, and to tenderness and local heat. When I saw the case, setting aside the presence of cancerous tumours in the skin, and the enlargement of the glands, its likeness to a deep-seated abscess was complete.

Just as malignant disease may be mistaken for abscess, so may abscess be mistaken for malignant disease.

*CASE V.—Abscess of the Breast simulating Carcinoma.*

A woman, aged 44, noticed that her right breast was undergoing enlargement; but this change was accompanied by no

sense of heat or throbbing, and was very slow in its advance. Two months later she came to St. Bartholomew's Hospital. On examination, I at first thought the case was one of scirrhus. There was a circumscribed swelling of the size of a hen's egg situated in the upper and outer part of a large breast. It was firm, and even hard, and somewhat fixed to the pectoral muscle. The skin over it was adherent. The nipple, the patient said, had shortened, and the axillary glands were enlarged. On further investigation, however, I detected a spot which was soft, and upon which pressure caused sharp pain, and on making an exploratory puncture I drew off some pus. I therefore opened the abscess which the puncture had disclosed. The abscess healed favourably, and the enlarged axillary glands returned to their normal size.

Several cases similar to this one have come under observation, and have shown that when an abscess is of only moderate size, when it is situated deep below the surface in the mid-substance of a plump breast; when it is surrounded by dense indurated and lobulated mammary gland tissue; when it is sub-acute or chronic in its progress, and has gradually become tense, and therefore hard and inelastic; when the usual signs of inflammation—heat, redness of the skin, and tenderness—are absent, and especially when the axillary glands are enlarged, nothing is easier than to mistake it for carcinoma, unless an exploratory puncture is made to determine the question.

The brief recital of the foregoing cases will serve as a reminder how closely abscess and malignant disease may resemble each other.

I now pass on to relate the examples I have met with in which malignant disease and suppuration have occurred side by side in conjunction with each other, and to show that while, in such instances, abscess generally occurs as a complication of malignant disease, yet sometimes malignant disease is secondary to, or springs up in connection with, an abscess. In this group, in which malignant disease and abscess are conjoined, the evidences of suppuration, since they are more declared and obtrusive, tend to obscure or completely overshadow those of malignant disease, and thus the latter is very apt to escape notice.

#### CASE VI.—*Cancer of the Cervical Glands conjoined with Suppuration.*

A man, aged 57, came to the out-patient room with disease of three months' duration, involving the glands along the front of the upper half of the right sterno-mastoid muscle. These glands formed a mass of the size of a small egg. The mass



was for the most part firm, but at one spot, where it was covered by thin, dusky-red, and adherent skin, it was soft and tender on pressure. Besides this principal swelling there was a second just below it, which had the general appearance of mere inflammatory enlargement of a gland. The patient looked prematurely old, and the case closely resembled one of senile struma, in which the glands were beginning to break down. The main swelling, however, was intensely hard, except at its summit, and immovably fixed by a wide base upon the subjacent structures. These two features led me to the conclusion that the disease was in reality malignant. A fortnight later, an opening had spontaneously formed at the soft spot already mentioned, and there was a daily discharge of about two teaspoonfuls of well-formed pus, slightly stained by admixture with blood. A week later still, an opening had formed in the lower swelling also; and whenever the dressings were removed, pus drained freely away and ran down the patient's neck. At this time both swellings had assumed unmistakable features of malignant disease, and at the end of another fortnight, while their bases were still hard and fixed, their summits had broken down into large, irregular, cancerous ulcers. The disease, still accompanied with suppuration, now made rapid progress, and at the end of two months the patient died of exhaustion.

*CASE VII.—Abscess associated with Epithelioma of the Mouth.*

A man, aged 61, was an out-patient in the course of last spring. He had an abscess in the right side of the face corresponding to the second lower molar. This was the size of a walnut, and was covered with dusky skin. It looked like an ordinary abscess resulting from suppuration round a decayed tooth. On further examination, however, I found that he had extensive epithelioma of the gum and the floor of the mouth, which was, he said, of about three months' duration. This patient, like the preceding, was prematurely old, and looked over seventy. He had long been out of work, and had been under-fed for several months during the severe weather of last winter. The abscess, shortly after I saw him, burst and discharged. The epithelioma, which was quite beyond surgical treatment, ran the usual course, and the patient died of exhaustion.

*CASE VIII.—Abscess in Cancer of the Upper Jaw.*

Mrs. W., aged 49, was thought by the surgeon who was attending her to have an abscess in the antrum. There



was considerable swelling of the face on the left side, which had existed, with gradual increase, for eight weeks. The tissues were indurated, and the skin dusky and suffused. A tooth had recently been extracted. Through its socket pus was escaping freely and a probe could be easily passed up into the cavity of the antrum. Thus it was clear that suppuration was going on, but there was more to be noticed. All the soft parts were infiltrated, brawny, and dusky, and closely adherent to the front of the jaw. The alveolar portion of the bone was rounded and tuberoso; there was bulging of the floor of the antrum towards the mouth, the eyeball was raised and slightly more prominent than its fellow, and the opening leading up into the antrum was bounded by hard rugged tissue, evidently the seat of cancerous ulceration. The patient declined any operative interference, and died in the course of three or four months from extension of the cancerous disease.

CASE IX.—*Abscess complicating Cancer of Pelvic Glands.*

A man, aged 42, a heavy drinker, and in every way reckless of his health, had a large ischio-rectal abscess. This was opened, and was soon nearly healed. A fortnight later he had a large collection of pus in the left iliac fossa, and was rapidly losing health and strength. This collection was drawn off with an aspirator, and there was then detected a large deep-seated tumour at the brim of the pelvis, which subsequently quickly increased in size, and caused his death four months later. No post-mortem examination was made, but there was no doubt that the tumour was malignant, and that it had been in course of development for at least some weeks, for when it was discovered on the withdrawal of the collection of pus, it was already as large as a cocoa-nut. I believe the ischio-rectal abscess and the abscess in the iliac fossa resulted from suppuration around this mass, though it is not easy to see how the pus had made its way into the former situation.

CASE X.—*Abscess complicating Malignant Disease of the Testis.*

A middle-aged man was admitted with what appeared well-marked malignant disease of the testis of about four months' duration. The swelling was rounded, smooth on the surface, and elastic on pressure. There was no oedema of the skin, and the patient complained of very little pain. I removed the testis, and on laying it open, found its central portion occupied by an abscess containing half an ounce of well-formed pus.

CASE XI.—*Abscess in Malignant Disease of the Cervical Glands.*

In 1875 I removed an epithelioma of the lower lip in a patient, aged 51, at St. Bartholomew's Hospital. Six months later he again presented himself. The cicatrix on the lip was quite sound, but the disease had attacked the sub-maxillary glands, and produced a large swelling, which was already beyond surgical interference. The swelling subsequently rapidly increased, and it also softened, and became tense and highly elastic to the touch. At the same time the skin over it became dusky, red, and oedematous. I felt satisfied that matter had formed, and as the patient complained of great pain, I made a small puncture with a tendon-knife, and about four drachms of pus mixed with blood and broken-down cell-growth escaped. The patient was much relieved for the time. The opening I had made, however, continued to enlarge on account of the tense condition of the swelling, and within a week the growth began to protrude, and three weeks later formed a large fungating mass, from which blood-stained pus was discharged in considerable quantities. Shortly afterwards the patient, who had rapidly lost strength, died of exhaustion.

CASE XII.—*Abscess in Malignant Disease of Larynx.*

A. J., aged 52, came into Mark Ward on May 19th of the present year, under the care of Dr. Andrew. Eighteen months previously he lost his voice. Three months before admission he was troubled with a swelling around the larynx, which made swallowing very difficult for two or three days. The swelling was very painful and tender to the touch. After ten days an abscess burst into the larynx, and he coughed up a quantity of foetid pus. Since that date the abscess cavity had from time to time filled up again, and had been emptied by spontaneous discharge. On admission he was unable to lie down, and his breathing was stridulous and noisy. The soft parts around the thyroid cartilage were thickened and tender, and the superjacent skin was dusky and hot.

On May 21 he coughed up several small fragments of bone. A fluctuating swelling was present in front of the thyroid cartilage, most prominent just to the left of the middle line. On laryngoscopic examination there was great swelling of the right aryteno-epiglottidean fold and false vocal cord, concealing the true vocal cord from view.

June 11.—The swelling in front of the thyroid cartilage had broken, and was discharging pus freely. A warty growth could be distinctly seen on the anterior part of the vocal cord. A

fragment of this was removed with forceps, and found on microscopic examination to consist of epithelial carcinoma.

June 15.—Swelling still discharging freely. Dyspnœa was not very marked. He complained of pain in the swelling, but was able to swallow food without much difficulty. He died quite suddenly on the evening of 16th. No post-mortem examination could be obtained.

It is difficult to say what was the nature of the disease at its commencement in this case, whether true epithelioma or a simple papilloma. Probably from the first it was an epithelioma. However, its character, when the patient was in the Hospital, was placed beyond a doubt by microscopic examination. The suppuration apparently followed inflammation setting in about two months before the patient was admitted. How the inflammation arose is doubtful. It may have followed necrosis of the framework of the larynx, resulting from the destructive action of the malignant disease—a course of events similar to that observed in Case VII. On the other hand, inflammation may have been developed around the malignant disease (see Case VI.), and have subsequently led to necrosis of the larynx and the separation of the fragments of bone which the patient coughed up. The main point, however, is that the abscess in or about the larynx, for which the patient was admitted, was secondary to, and was yet masking, the malignant disease.

In the foregoing group suppuration followed upon and was a complication of malignant disease; and it may be interesting to inquire in what exact manner the formation of matter was brought about. Probably the explanation is different in different cases, though there is one predisposing cause that was present in all alike. All the patients were in a state of depressed vitality. Two were heavy drinkers, some were prematurely old, one was old and feeble and had been for some time exposed to cold and privation. In such patients the nutrition of the tissues, disturbed by the progress of the malignant disease, would, it may fairly be supposed, readily pass into a low form of inflammatory action. On the other hand, the inflammatory process may, perhaps, have been induced by the necrosis of the new growth, a result depending on the low vitality of the surrounding structures. In Case VIII. inflammation was probably excited by the putrefactive changes going on around the area of disease, for the patient's mouth was in a very unhealthy and foetid state, and the cavity of the antrum was freely exposed to air charged with septic elements. The exciting cause of suppuration in Case VII. was, I think, the occurrence of necrosis of the jaw, which resulted from the destruction by cancerous ulceration of the soft parts over the



bones. Extensive necrosis of the jaw is unusual in cases of epithelioma; but here, when once it had occurred, suppuration followed it, just as it follows necrosis from any other cause. In Case X. the abscess which was found in the mid-substance of the testis was apparently due to the fact that, as the growth increased in size, blood was shut off or diverted from the central portion, which thus became the seat of inflammatory softening. Another view might be that it was due to softening following thrombosis. In Case XI. very much the same explanation may be offered. The increase in the size of the malignant swelling was so rapid that in a few weeks the patient acquired the appearance of having an enormous double chin, and it was easy to realise the degree to which nutrition of the centre must have been cut off by the accumulation of new products in the more superficial parts of the mass.

*Diagnosis.*—The variety of the cases just recorded shows that inflammation going on to suppuration may occur as a complication of many forms of malignant disease. It is important to bear this in mind, for otherwise, as the symptoms of the inflammation will very generally be more conspicuous than those of the malignant disease, the latter is, as I have said above, very likely to escape notice.

In the majority of cases, however, although the symptoms of inflammation are the first to catch the eye, some of the various features of malignant disease will, if due care is used, be detected in the background. Thus in Case VI., in the first place, the swelling was of stony hardness, and, in the second place, absolutely fixed. It thus conformed, in two very telling features, to some of the forms of malignant disease. Either of these signs apart from the other is indeed very suggestive, but when hardness and a solid base are met with together, they ought always to raise a strong suspicion that malignant disease is present.

In Case VII. any one who was content to treat the abscess of the cheek at first sight would have fallen into an error, but he would be without excuse, for the moment the interior of the mouth was examined the existence of epithelioma of the gum would have become apparent.

In Case VIII. close inspection showed that the patulous hole formed by the empty tooth-socket was lined and bordered by rugged and warty mucous membrane, unmistakably epitheliomatous in character, while the neighbouring gum was filled out and irregular, and its surface was coarse and papillomatous.

In Case XI., though many of the symptoms pointed to, and indeed depended upon, the formation of matter—these symptoms were the very rapid increase of the swelling, and an appearance of pointing; redness of the skin, heat of the surface, and distinct



fluctuation—there were (a) the fact that an epithelioma had been removed from the lip some months before; (b) the great size and widespread area of the swelling; (c) its solidity and firmness over the greater part of its extent,—softening and fluctuation being limited to its central part; and (d) the cool state of the surface, combined with infiltration and brawny thickening of the skin, at the circumference of the swelling.

*Treatment.*—The treatment of cases where suppuration supervenes as a complication of malignant disease must take both these conditions, and also the circumstances under which they are in progress, into account. In any case in which the malignant growth can be removed—as, for example, in such an instance as Case VIII., in which carcinoma involved the superior maxillary bone—the removal of the disease may be carried out notwithstanding the fact that suppuration is present. The same rule should be followed in a case of combined malignant disease and suppuration of the breast (*vide* Case XIV., p. 159).

In Case XIII., p. 157, Mr. Willett removed the testis as soon as he found it was the seat of malignant disease, in spite of the fact that suppuration was going on around it. In such cases two points claim a passing notice. The first is that hæmorrhage is likely to be profuse at the time of the operation, and good assistance should therefore be at hand. The hæmorrhage will be mainly in the form of general oozing, that can be readily controlled by pressure; but if any considerable vessels bleed, they should be at once secured with pressure forceps, and the operation should be completed as soon as possible consistently with its careful performance. Secondly, it may be asked whether the healing of a wound involving structures that are in a state of inflammation will take a favourable course. I believe that if efficient drainage is provided, and the surface is well sponged with either carbolic lotion, 1 part in 60, with a solution of tincture of iodine (1 in 500), perchloride of mercury 1 in 1000, or chloride of zinc (20 grains to the ounce), the progress of the wound will be favourable. It was so in Mr. Willett's case, and also in Case XIV. (*infra*, p. 159).

The impression that was formerly held, and that is, I believe, still entertained by some surgeons, that inflamed structures do not tolerate operative interference, is to a great extent erroneous, and is a dogma which often stands in the way of treatment that would be followed with very beneficial results. The tissues that are divided when an acute abscess is opened do not take on an unhealthy action; on the contrary, if free drainage is secured, and appropriate dressings are employed, the tissues bordering the incision are found two or three days later to be in a perfectly healthy state. The same clinical fact is illustrated by cases in

which ovariectomy has been performed in the presence of acute peritonitis, and again, in cases in which the shaft of a long bone that has undergone acute necrosis from diffuse periostitis is removed. Here an extensive incision has to be made, and the inflamed periosteum and adjacent parts are freely treated and exposed to the air, and yet, generally, no ill effects ensue.

But in other cases the malignant disease itself may be so extensive or occupy such a position that its removal is out of the question, and the only surgical point that arises is whether the collection of pus should be evacuated or be allowed to come to a spontaneous discharge.

In determining what course to pursue, the surgeon must consider in each instance all the circumstances of the case; among others, the amount of pain, so far as it seems to depend on the retention of pus. But there are two points that tell against interference. First, the danger that, if an incision is made, fungoid protrusion of the tumour is very likely to occur, especially when the disease is making rapid progress and the skin is already tense and thin. In Case XI. the result of the incision was that the integument retracted, and within a few days a well-marked example of the old fungus hæmatodes was developed, and was aggravated in its progress by the circumstance that, to the rapid growth of the tumour there was added a process of diffuse inflammation with its attendant accession of vascular disturbance and cell-exudation.

Secondly, it is a familiar observation, that while on the one hand, when an abscess is opened, septic changes, unless precautions are taken, or sometimes in spite of them, will very likely set in, on the other hand, when matter is left to spontaneous discharge, these changes are seldom observed. This fact should certainly be allowed full weight in cases in which suppuration has occurred in association with malignant disease; for the result of an incision may be not only to provoke or accelerate the protrusion of the tumour through the skin, but to expose its substance to contact with the air, and thus to establish putrefactive changes, which cannot fail to exert a mischievous effect on the course of the disease. If anything is to be done for the evacuation of matter, it should consist either in the use of the aspirator, or of a small puncture at some point at which healthy skin is to be found, and full precautions against septic changes should be persistently employed.

*CASE XIII.—A Case in which Prolonged Suppuration was followed by the development of Malignant Disease.*

Oliver H., aged 68, was admitted into Casualty Ward on September 10, 1886, under the care of Mr. Willett, who allows me

to report it. His general health appeared good, and he looked much younger than his age. He stated that some five years before, his scrotum enlarged gradually and quite painlessly. The swelling was tapped seven times at long intervals. The fluid drawn off was at first bright yellow, but of late years it had been of a dark brown colour. He was tapped last in May 1885, and the puncture then made had never healed. Since that date the left side of the scrotum had gradually become more painful, and blood with pus had been constantly draining away, occasionally saturating his clothes.

*Present condition.*—The scrotum on the left side is now much enlarged and very tender. The swelling is hard on the surface, but fluctuation can be detected on deep pressure. The left testis cannot be felt. The spermatic cord is much thickened. There is a small opening at the root of the penis, through which a probe can be passed for half its length in a downward direction; and a second and larger opening at the bottom of the scrotum, through which a probe can be passed for three-quarters of its length. The latter opening, he says, is where he was tapped sixteen months ago. On September 12 an incision was made into the scrotum, and the condition of the deeper parts explored by Mr. Willett. The tunica vaginalis was found occupied by broken-down and decomposed fibrine mixed with old blood-clot. A drainage-tube was passed through the sinus at the lower part of the scrotum, and a large charcoal poultice was applied.

September 15.—Since the scrotum was opened and drainage provided, the patient has been free from pain. The wound is syringed out daily with Condyl's fluid. There is still some foetid dark coloured discharge.

September 16.—A quantity of broken-down testicular substance escaped from the upper part of the wound to-day.

September 30.—As there were signs of retained pus, the wound in the scrotum was enlarged. The whole of the left side of the scrotum was found in a sloughing condition. Any sloughs that were loose were removed, and charcoal poultices were continued.

October 5.—The patient is doing well. The wound is healthier, and the temperature, which has hitherto ranged between 100° and 102°, is nearly normal.

Shortly after this date it was observed that the scrotum was steadily enlarging, and that some solid material was beginning to protrude at the bottom of the wound. On October 17 a small portion of this growth was removed, and proved, on microscopic examination by Mr. Bowlby, to present the structure of a round-celled sarcoma.

October 19.—The scrotum is larger; there is a good deal of



purulent discharge, containing a large admixture of blood. On October 27 Mr. Willett removed the left testis and a wide extent of the superjacent skin, together with several enlarged inguinal glands.

On examination of the parts removed, a large sarcomatous mass was found springing from the epididymis and surrounding the testis. The cord was infiltrated for some distance above the testis. The glandular structure of the testis itself was not involved in the disease.

November 3.—Patient is doing well, and the wound is filling up.

November 26.—General health good. A small abscess in the lower part of the scrotum was opened to-day.

November 28.—Some recurrence of the growth is taking place at the bottom of the scrotum, where a firm nodule can be detected. A few days later, as the nodule was increasing in size, Mr. Willett removed it with a wide area of surrounding and apparently healthy tissue.

December 14.—There is now rapid increase of the growth, and the inguinal glands are enlarging and are hard.

December 20.—The patient was anxious to return home, and left the Hospital to-day. The recurrent growth was at this time making rapid advance.

The starting-point of the disease in this case seems to have been an ordinary hydrocele. This was tapped several times, and although it is difficult to speak with certainty, as the report of what occurred before his admission into the Hospital is derived entirely from the patient, it seems probable that at the last tapping the testis was wounded, with the result that a hæmatocele was developed. Around this the tunica vaginalis appears to have become inflamed, and to have furnished a persistent discharge, at times purulent, and at times serous, and often mixed with breaking-down blood-clot; fistulous passages were established, and the scrotum on that side became involved in chronic inflammation, attended with brawny thickening of the integument and sloughing of the cellular tissue of the scrotum. At length, in the confines of this area of persistent suppuration, a sarcomatous growth was developed.

*CASE XIV.—A Case in which a Malignant Growth was developed in the Floor of an Abscess of the Breast.*

Mrs. G., aged 50, sent for admission into the Hospital, was reported to have an abscess of the right breast, from which she had been suffering for nearly four months, which had been opened, and was still discharging, and was attended with



considerable swelling. On examination, I found a sinus where an incision had been made. This sinus was discharging thin but healthy pus. Two other openings had spontaneously formed and were also discharging. The deeper part of the breast was the seat of a considerable firm swelling, constituting a distinct irregularly-lobed tumour, which, towards the axillary border of the gland, was covered with dusky and adherent skin, and it was evident that the confines of the abscess were occupied by a new growth. A few days later I removed the tumour and the remains of the abscess cavity. Hæmorrhage was not unusually free. The patient made a favourable recovery. The tumour on examination proved to consist of a well-marked carcinoma of the size of a small orange.

I subsequently learnt from Mr. Bowlby that the patient died nine months after leaving the Hospital from recurrence of the disease.

The development of malignant disease in a part that has been the site of long-continued suppuration is, I think, very rare. Cases XIII. and XIV. are the only instances of which I can relate the particulars, though, no doubt, by further search, some few others might be found. The occurrence, however, of malignant disease as the consequence of prolonged inflammation of a less active form is often seen; as, for example, in cases of unsound scars that are frequently the seat of irritation and superficial inflammation, and in cases of syphilitic inflammation of the tongue; while epithelioma of the glans following prolonged balanitis in elderly men where phimosis has been present is not very rare. There is no difficulty in seeing that the much more severe disturbance attending continued suppuration may, when other conditions are favourable, lead to a parallel result.

At p. 147 I have mentioned a case of sarcoma of the kidney in which the temperature ranged between normal and  $102^{\circ}$ . A high temperature in malignant disease is by no means rare. I have met with several examples of it, and others have been mentioned to me by Mr. Butlin and Mr. Bowlby. In a case of subperiosteal sarcoma of the femur, the temperature reached  $103^{\circ}$ . In a boy aged 9, at the Hospital for Sick Children, in whom it was doubtful whether a swelling of the femur was due to sarcoma or scrofulous osteitis, but which proved to depend on sarcoma, the temperature was  $102^{\circ}$ . In all these instances the elevation of temperature was probably due to tension dependent on rapid growth of the tumour. Such examples will serve to show that in doubtful cases a high temperature cannot be relied on to prove that a disease is inflammatory rather than malignant.

# THE STRUCTURE AND FUNCTION OF THE AURICULO-VENTRICULAR ORIFICES.<sup>1</sup>

BY

ARTHUR DAVIES, M.B.

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In the following paper I propose to discuss the arrangement and the relations of the structures which enter into the composition of the auriculo-ventricular orifices, paying special attention to the arrangement of the muscular fibres around those orifices. I shall divide my paper into two parts; the first part will be mainly concerned with the anatomy of these orifices, and here, although guided chiefly by the observations of others, I shall embody a few observations of my own. The second part will consist of a discussion on the conclusions and inferences which have been deduced from the nature of these orifices. Since the different authors whom I have consulted on the subject seem to agree in considering the left ventricle as more typical than the right, I may at once state that the remarks I am about to make, although referring to both orifices, yet have a more special reference to the left auriculo-ventricular aperture. On turning to the standard text-book of anatomy (Gray), I find it stated "that the left auriculo-ventricular orifice is bounded by dense fibrous tissue, lined by the endocardium of the heart." Mr. Savory, in a paper read before the Royal Society in 1851, gives the following description of these rings:—"The tendinous circles (fibrous zones, framework of the heart, &c.) surrounding the auriculo-ventricular orifices are generally described as firm structures, quite distinct from, although closely connected with, the surrounding parts, which, besides serving as points of attachment to the base of the tricuspid and mitral valves, afford origin and insertion to all the fibres of the auricles and ventricles." This latter point I shall have occasion to refer to later on. "In the anterior half of the border of the ventricular septum a considerable

<sup>1</sup> This paper was read as a Graduation Thesis at Cambridge.

portion of dense fibrous tissue is found closely connected at its anterior extremity with the adjacent posterior portion of the commencement of the aorta, and causing a difficulty, not only in its separation from these parts, but also in the case of the auricles. Spreading out posteriorly between the ventricles, but especially curving round to the posterior portion of the left auriculo-ventricular opening, this fibrous band adds considerably to its thickness. It possesses all the characters of *densest fibrous tissue*. On the opposite side also a thin but dense portion of fibrous tissue extends from the aorta around the left margin of the ring." I have quoted thus freely from Mr. Savory's paper, as it gives the best description that I have come across of the fibrous character of these rings. Now, the following statement in Quain, vol. ii. p. 494, is one on which I wish to lay special stress. It says "that the tendinous orifices of the aortic and left auriculo-ven-

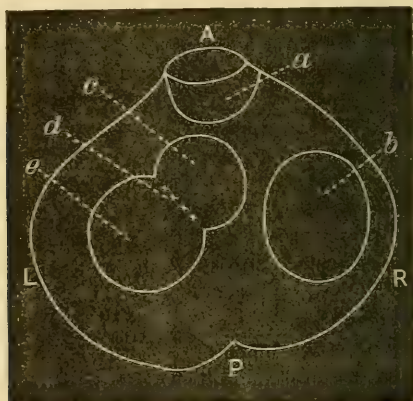


Diagram representing the Confluence of the Mitral with the Aortic Orifice after Boiling.

- A. Anterior, P. posterior surface of the heart.
- R. Right, L. left side of the heart.
- a. Pulmonary orifice.
- b. Tricuspid orifice.
- c. Aortic orifice.
- d. Confluence of aortic and mitral orifices.
- e. Mitral orifice.

tricular rings are confluent, so that when the fibrous tissue is destroyed by boiling, the apertures run into one." This experiment I have tried, and the accompanying diagram shows the result. In it the two orifices, the aortic and mitral, are seen to form a figure of 8. Mr. Savory has a similar drawing in his pamphlet, where, after describing the arterial tendinous rings and their relations to the semilunar valves and muscular tissue of the ventricles, he states "that the posterior aortic and a portion of

the adjacent valve are unsupported by muscular tissue, since the posterior portion of the aortic orifice is continuous with the left auriculo-ventricular orifice, no muscular tissue existing at this point, but only fibrous tissue." In some animals the left auriculo-ventricular ring is still further strengthened. Thus in the larger ruminants we find that there are two considerable portions of bone, forming bony arches meeting behind the aorta in the centre. From the larger bone a small process proceeds backwards into the muscular tissue of the septum between the ventricles, being gradually lost in dense fibrous tissue, which is here found surrounding the right border of the left auriculo-ventricular opening; a thin process of dense fibrous tissue is continued from the smaller bone around the left margin of the auriculo-ventricular opening. These heart-bones are in close relation posteriorly with the *anterior mitral valve*. In the human heart these bones

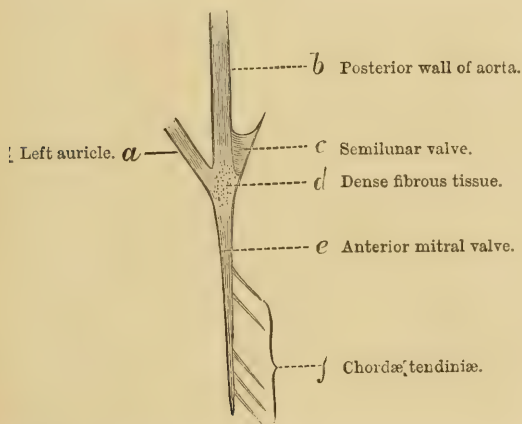


Diagram illustrating a vertical section made through the junction of the posterior wall of the aorta and the anterior portion of the left auriculo-ventricular ring, showing that no muscular tissue exists at their junction, but only dense fibrous tissue.

are represented by dense fibrous tissue, having almost the resistance of bone, which enters into the formation of the festooned rings, and is intimately connected with the dense fibrous tissue found in the anterior portion of the septum and surrounding the left auriculo-ventricular orifice.

It is evident, therefore, from the above description, that the left auriculo-ventricular orifice is bounded by firm, dense, fibrous tissue, supported everywhere by muscular tissue except at the *anterior portion of the ring*, where it lies adjacent to the *posterior wall of the aorta*.<sup>1</sup> This fact is one on which I wish to

<sup>1</sup> Vide diagram.



lay special stress. With regard to the right auriculo-ventricular orifice, there is not so close a connection between it and the pulmonary orifice, since the posterior portion of the pulmonary orifice is separated from the anterior border of the right auriculo-ventricular ring by a greater interval, which is occupied by fibres which form the base of the right ventricle, and have a direction from the septum and aortic orifice obliquely outwards to the right; it is also surrounded by fibrous tissue, not so dense, however, as in the case of the left auriculo-ventricular orifice.

Having now considered the nature and arrangement of the fibrous tissue surrounding the auriculo-ventricular orifices, we will pass on to the inquiry into the relation of the muscular fibres to these orifices, and endeavour to find out whether there is any arrangement of fibres which are capable by their contraction of altering the areas of the auriculo-ventricular orifices either in the direction of dilatation or of contraction. Now, with regard to the former question, it will be sufficient to state that, considering the inelasticity and density of the fibrous tissue, which has been described above as bounding these orifices, no ordinary force would be able to stretch it so as to increase the areas of the orifices, unless the fibrous tissue became disorganised. Can the areas of these orifices, then, be altered in the direction of contraction; that is, is there any arrangement of circular fibres, completely encircling either the base or the individual auriculo-ventricular orifices, and acting after the manner of sphincters, which by their contraction can diminish the areas of the auriculo-ventricular orifices? It has been stated by one author<sup>1</sup> that these areas in the ventricular systole are diminished by one half. In the latter part of my paper I shall discuss the advantages which are derived from the hypothetical presence of such an arrangement of fibres.

Now it must be evident, in the first place, that in order for the area of an orifice to be diminished it must be completely encircled by muscular fibres. This, as we have seen, is far from being the case in the left auriculo-ventricular ring. In the second place, it is scarcely possible that a circular band of muscular fibres, encircling a ring formed of strong, dense, pliable, fibrous tissue, can produce, when it contracts, any alteration in the area of that orifice; it may possibly alter the shape in one direction or another, but by so doing it does not in any way cause any diminution in the area of the ring. This fact any one can easily demonstrate to himself by taking a ring of whalebone, which, being formed of dense, tough,

<sup>1</sup> Macalister, *British Medical Journal*.

pliable material, resembles fairly closely an auriculo-ventricular ring in its nature. If now this whalebone ring be encircled by an elastic band or by the fingers, it will be found impossible to alter the area; the only effect which is produced being an alteration in the shape of the ring. In this experiment the encircling elastic band or fingers resembles the circular band of muscular fibres. Moreover, if we consider the other sphincter muscles of the body, we do not find that they are bounded on their interior surface by strong fibrous tissue, but by loose mucous membrane, so that when they contract they "narrow" the orifice, not by elongating it, but by diminishing *in toto its area*, which the latter process does not.

We will now pass on to the consideration of the relation of the muscular fibres to the auriculo-ventricular orifices, taking the case of the auricular fibres first of all. Now the muscular walls of the auricles are found to terminate by two attachments. The larger and outer portion is inserted into the fibrous auriculo-ventricular ring, while the thinner and inner portion can be traced between the surfaces of the valves, terminating more or less abruptly by attachment to the tendinous tissue. The former, therefore, offers no arrangement of fibres capable of contracting or in any degree altering the capacity of the inlets, while the latter probably assists in raising the tricuspid and mitral curtains in ventricular diastole.

Turning next to the relations of the muscular fibres composing the ventricular walls to the auriculo-ventricular orifices, we find that the fibres are arranged in seven layers, three external and oblique, one central and transverse, and three internal and oblique. Now, according to Savory and Quain, all the fibres are inserted into the auriculo-ventricular rings; this is, however, strongly denied by Pettigrew,<sup>1</sup> who states that only the fibres composing the first or external, and the seventh or internal layers, are inserted into these rings, the rest forming loops which are continuous beneath them. In order to show the directions of the fibres of the different layers, I have taken the accompanying diagram from Pettigrew, with slight modification. From it we see that the fibres pass from an almost vertical direction to a horizontal position,<sup>2</sup> thus the first or external, and the seventh or internal layers are inserted at right angles to the plane of the auriculo-ventricular rings, while the fourth or central layer is almost parallel with this plane. Now, although all the fibres composing the different layers are of the same length, yet they do not pass equally, as regards distance, either towards the base or apex. Thus, at the extreme base, we

<sup>1</sup> J. Pettigrew, *Philosophical Transactions*, 1864.

<sup>2</sup> *Vide diagram.*

find only the first and seventh layers. There are here no fibres which can be said to have a circular or sphincter-wise arrangement. If transverse sections be made at different levels through the ventricular walls, beginning just below the plane of the auriculo-ventricular orifices, we find that more and more layers enter into the formation of the walls, until, when we reach the middle third, all seven layers are present. But what I wish particularly to point out is the fact, that it is at this part that we find the horizontal or transverse layer most marked, and predominating over the other layers, but in the neighbourhood of the extreme base, in the plane of the auriculo-ventricular rings, this layer is all but

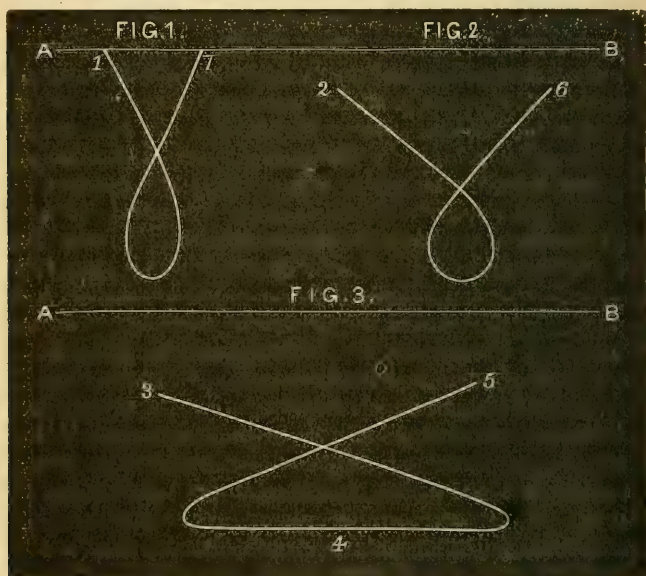


Diagram illustrating the different directions and degrees of obliquity taken by the different fibres of the heart. Fig. 1 represents the course of the first and seventh layers; fig. 2 that of the second and sixth layers; while fig. 3 represents the course of the third, fourth, and fifth layers. The line A B represents the plane of the auriculo-ventricular orifices.

absent. It follows, therefore, from the above description, that in the plane of the auriculo-ventricular orifices, the wall of the heart is thinnest, and this inference is confirmed not only by transverse, but by vertical sections. Moreover, we have seen that the fibres in this situation, *i.e.*, at the extreme base, have an almost vertical spiral direction; at any rate, they are not circular.

Lastly, are there any fibres completely encircling the base of the heart which by their contraction can so diminish the



transverse diameter of the base as to lessen the areas of the auriculo-ventricular orifices? In answer to this question it may be briefly stated, that many of the fibres entering into the formation of the right ventricular wall issue from the left auriculo-ventricular orifice; but the fibres which are chiefly common to both ventricles are the external posterior layers, and these have an almost spiral direction. Before proceeding further, it will be best to sum up what I have endeavoured to show in the preceding pages:—

1. That the rings surrounding the auriculo-ventricular orifices are composed of dense fibrous tissue, which is inextensible.

2. That in the plane of the auriculo-ventricular orifices there are *no* muscular fibres arranged after the manner of a sphincter, either around the entire base of the heart or the individual auriculo-ventricular orifices, and capable of altering their areas.

Now it has been stated, in an interesting and able lecture given by Dr. Macalister<sup>1</sup> on the results of some experiments on a dog's heart, that the transverse diameters of the heart are diminished everywhere in systole, whereas the length does not alter, and he deduces from this the important corollary that the regurgitant murmur heard when an animal is bled is due to the insufficiency of contraction of a band of muscular tissue which he assumes to encircle either the entire base or its individual auriculo-ventricular orifices. He says, "Let us, lastly, see how we can explain the action of the auriculo-ventricular valves; we shall speak, for brevity, of the mitral only. I have here a perfectly flaccid and relaxed sheep's heart, in which I have tied a glass tube in the aorta, and though I fill the ventricle with water, the valves float up, but do not close the ostium quite perfectly; a jet of water regurgitates. But if I perform the same experiment on a heart stiff and contracted in rigor mortis, the valves are quite competent even when I put on considerable pressure. This difference between the two hearts has been attributed to some *obscure* action of the papillary muscles. But I can make the valves of the flaccid heart quite competent in a very simple way, by simply encircling the base with an ordinary elastic band, so that its area is somewhat contracted. The valves are now as good as in the other heart, yet the papillary muscles are in *the same* state as before. The fact is, that we were expecting, in the first instance, the valves to close orifices that were too big and round for them. In normal circumstances, Nature does what I did for them. As systole begins, the muscles surrounding the ostia contract, and presently, instead of the round gaping

<sup>1</sup> Macalister, Form and Mechanism of the Heart, *Brit. Med. Journal*, 1882.



orifices of diastole, the valves have to close oval and compressed ones. When the systole is complete, the area of the orifice is not much more than half of what it is in diastole."

Now let us assume, for the sake of argument, that in systole the transverse diameters of the heart are everywhere diminished (leaving out of sight the fact that when a lever is placed on the surface of the heart, it is *raised* in systole, and also the additional fact, that if a contracting heart is held between the fingers, it is felt to become dense and hard in systolic contraction), and let us assume that the areas of the auriculo-ventricular orifices are so gripped and contracted that they are diminished by one-half of what they were in diastole; then let us inquire what the advantages are, as regards the circulation of the blood through the heart. It is usually admitted that during systole the muscoli papillares draw the valve curtains downwards into the ventricular cavity so as to form an inverted spiral cone, and, by virtue of their spiral action, wedge the different segments of the valves closely together, these having been first floated up by the blood during diastole, aided by the auricular contraction producing the recoil of the ventricular blood on the under-surface of the valves. On the above supposition, the base of this cone is partially diminished. Now the blood is constantly and normally passing during the ventricular systole from the auricle into this cone, and since its velocity and pressure are very small, its dilating power must also be small; but before it can enter into the papillary cone it has to pass during the ventricular systole through the supposed normal contracted mitral orifice, whose area is diminished by one-half. It has also to do so not only in the ventricular systole, but in the diastole, unless in the latter case the circular band instantly relaxes, or there is some force which can fully dilate the orifice before the commencement of the ventricular diastole, so that there is no obstruction to the incoming blood. And granting that such a force is required to dilate the orifice completely, and so obviate any obstruction, it may be asked, where does such a force reside? As is well known, the contractile power of the auricle is almost insignificant, since it comes into operation when the ventricle is all but full; hence it can only send into it a very few particles of blood. If this contracted orifice is to be opened, then, it must be opened by the contraction of the right ventricle, entailing therefore an expenditure of power to overcome an obstacle which the heart is thus unnecessarily made to create. Suppose, now, that the right heart is unable to overcome the obstruction, the contracted sphincter would be a source of constant vibration, and would produce a direct mitral murmur,

which would be constantly found in weak, anæmic individuals, and more especially in chlorotic girls. Now we know that the hearts of such persons are not characterised by a direct mitral murmur, but by a basic pulmonic murmur. Moreover, such persons would be constantly liable to a condition of mitral stenosis. It is evident, therefore, that this hypothetical circular band must be a source of obstruction to the circulation if it exists. If we regard the other sphincter muscles of the body, we find that they are opened by the passage of contents forcibly driven through them by the contraction of the walls of a cavity above, *e.g.*, the sphincter ani, pylorus, and bladder.

Another question suggests itself. We have seen above that, with the exception of this hypothetical circular band, the rest of the muscular fibres are inserted into the auriculo-ventricular rings. What effect, then, will a shifting *point d'appui* (since the fibrous ring is constantly altering in area) have on the action of these fibres? Now, of course, in order for a muscle to produce its full effect, it must have a firm point of attachment, and it is evident that this cannot be the case in the present instance. Since the first or external layer is closely connected with the seventh or internal layer (both layers being composed of almost vertical fibres), and helps to form the *musculi papillares*, it is not unreasonable to suppose that any instability of the fulcrum on which they act will have a corresponding effect on the *musculi papillares*, and will prevent them from acting in a proper spiral manner, so that instead of making one turn and a half of a spiral, they now make only one turn and a quarter, and this in itself would allow a slight regurgitation to take place. It is also fair to suppose that when we consider the direction and insertion of the majority of the muscular fibres, that they would tend by their contraction to keep the auriculo-ventricular orifices open, and, being inelastic, no amount of forcible contraction can alter their area.

Is the circulation on the ventricular side aided by the hypothetical circular band? Since the whole of the ventricular wall helps in expelling the contents of the cavity, it is clear that the supposed sphincter which forms part of the base of the cone, and is not practically a part of the parietes of the ventricular wall for the time being, cannot help by its contraction to expel the contents, and therefore the existence of a sphincter in assisting the circulation is useless and gratuitous.

I should like to summarise, before closing my paper, the arguments which I have adduced to show that no sphincter band of muscular tissue can exist around the auriculo-ventricular openings:—

1. On the authority of all observers, including Dr. Macalister himself, these openings are surrounded by firm, dense, inelastic, inextensible fibrous tissues, which, if not inextensible, would soon lead to dilatation of their orifices by the centrifugal force exerted by the blood passing through them, and would therefore be a constant source of disease. This non-extensibility is most marked in the case of the aortic and pulmonary orifices, which have to resist the powerful centrifugal force of the currents of blood traversing them, the fibrous structures surrounding the auriculo-ventricular orifices being less developed, but sufficiently strong, so as to withstand the smaller centrifugal force exerted by the blood in its passage into the ventricular cavities.

2. The supposition of a sphincter entails the idea of a force existing in the left auricle and right heart capable of opening the orifice which the sphincter partially closes—a waste of power which the economy of Nature forbids.

3. The moving sphincter being a shifting base or fulcrum, must tend to impair the action of the papillary muscles, cords, and tendons.

3. The sphincter muscle would in no way assist in the expulsion of the ventricular contents, as has been explained.

4. I would like to refer to an extract from Drs. Gibson and Broadbent's "Medical Anatomy," "Fasciculus," No. vii., in which they state: "When we observed the heart acting vigorously under water after having been cut out, it seemed to us that the circumference of the shut valve (mitral) did not lessen with the diminution of the ventricle towards the end of systole. It would appear that the pressure of the blood, by filling the sacculi on the under-surface, unfurls, flattens out, and enlarges the valve, so as to maintain it almost of full size to the end of systole." The observation has also been made that where sphincters do undoubtedly exist, valves are absent, thus showing the incompatibility of the two structures existing at the same time. The view expressed above appears to have been given up by Dr. Broadbent (*British Medical Journal*, March 1, 1884).

5. Lastly, what appears to me to be a fatal objection to the supposition that a sphincter muscle diminishes the auriculo-ventricular aperture is, that its action cannot begin until the diastole of the ventricle is complete, and the ventricles filled with blood and the curtains floated up dividing the auricle from the ventricle. It is evident that if the aperture is not completely closed by the curtains, that the sphincter, requiring some amount of time, however small, for its action, must in that small space of time necessary for its share in the closure leave an opening through which the general ventricular contraction must

drive some amount, small though it may be, into the auricle. In other words, this supposition of the action of a sphincter muscle must at every beat in the normal heart inevitably cause regurgitation. Let us suppose that only *one* drop, one minim, of blood regurgitates at each beat through the mitral opening. It follows, therefore, that 60 drops or one drachm per minute regurgitates from the ventricle into the auricle, supposing the heart to beat sixty times in a minute. This is equivalent to 60 drachms, or seven ounces and a half will pass from one chamber to the other in the course of one hour, and that 180 ounces, or nine pints, will thus regurgitate in twenty-four hours.





# NOTES OF AN EXPERIMENT

ON

## THE INDUCTION OF FALSE ALBUMINURIA.

BY

D'ARCY POWER.

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IN a previous volume<sup>1</sup> of the St. Bartholomew's Hospital Reports, I published, in conjunction with Dr. Brunton, the results of certain experiments "On the Albuminous Substances which Occur in the Urine in Albuminuria." As a sequel to this paper I endeavoured to induce false albuminuria in myself by consuming daily for a short space of time a large number of uncooked hen's eggs. As the details of this experiment have not as yet been published, the present opportunity is taken of bringing them forward.

I may preface my remarks by stating, that at the time of the experiment I was a healthy undergraduate at Oxford, aged 22, weighing 157 pounds, measuring 5 feet 6½ inches in height, and leading an active life both physically and mentally. The eggs were eaten in an uncooked condition, because it was considered that their albumins were more likely to be absorbed in an unaltered state than if they had been previously coagulated. Egg-albumin was chosen in preference to other proteids because it has long been known that white of egg injected under the skin reappears in the urine, giving rise to pseudo-albuminuria, whilst the serum of blood, or a solution of serum-albumin, injected in a similar manner, causes no such albuminuria. This difference in the behaviour of the various classes of albumins is attributed by Dr. Brunton to the fact that white of egg has a smaller molecule than serum-albumin, as there is reason to suppose that small molecules diffuse more readily through animal membranes than do large ones. Throughout the experiment I took as small an amount of carbohydrates and fluids as was consistent with my comfort.

<sup>1</sup> Vol. xiii. p. 283 *et seq.*

On the 16th of October, the urine passed during the preceding twenty-four hours was carefully examined. It was clear and light-coloured, with a specific gravity of 1019. No trace of albumin was found on acidifying and boiling. There was no opalescence when a sample was largely diluted with distilled water, and it was therefore assumed to be practically free from globulins.

On the first day, breakfast at 8 A.M. consisted of six unboiled eggs beaten up, half a pint of tea without milk or sugar, and two thin slices of bread and butter. The urine passed  $1\frac{1}{2}$  hours after breakfast was examined at 1 P.M.; it was thick and very turbid, but it became clear on filtering. No trace of any coagulation could be obtained upon boiling the clear filtrate, nor was there any turbidity on the addition of strong nitric acid. The urine passed five hours after breakfast was examined immediately; no albumin was detected.

Lunch, taken at 1.15 P.M., consisted of six unboiled eggs beaten up and a slice of dry bread. The urine passed  $2\frac{1}{4}$  hours after lunch did not present any coagulum on boiling, nor was there a trace of any turbidity on the addition of nitric acid. The urine passed  $5\frac{3}{4}$  hours after lunch was examined; a slight opalescence was obtained on boiling, and it became a coagulum on the addition of strong nitric acid. The haze was, however, too slight to enable the exact point of coagulation to be determined. There was a slight effervescence when the urine was boiled with nitric acid.

Tea, consisting of six unboiled eggs beaten up, and a pint and a half of tea with milk and sugar, was taken at 6 P.M. Urine was passed four hours later; it was clear and had a specific gravity of 1028. It presented a trace of coagulation on boiling, and it effervesced on the addition of nitric acid, but the coagulum remained.

During the day I had been continually walking about, but had not taken any violent exercise.

On the second day of the experiment, October 17, the urine passed at 6.45 A.M. before breakfast was clear, of a moderately dark colour, with a persistent froth upon the surface. It had a specific gravity of 1024. No coagulation occurred on boiling it, nor could I detect any turbidity on the addition of nitric acid.

Breakfast at 8 A.M., consisting of six unboiled eggs, a pint of tea with milk and sugar, and a small quantity of bread and butter. The urine passed soon after breakfast did not contain any albumin, neither did that passed five hours subsequently.

Lunch at 1 P.M. was made of six unboiled eggs beaten up in two ounces of port-wine and six small "digestive" biscuits. No albumin was found in the urine passed  $1\frac{1}{2}$  or  $4\frac{1}{4}$  hours after this meal.

Tea at 6 P.M., as on the preceding night, consisted of six raw eggs with some bread and half a pint of tea. The urine passed 3½ hours after tea contained no albumin.

During this day I took little or no exercise, as I only walked a mile quietly.

On October 18, the third day of the experiment, the urine passed before breakfast yielded no trace of albumin. When it was tested (a) by boiling, (b) by the addition of nitric acid in the cold and subsequently boiling.

The urine passed five hours after a breakfast consisting of six cooked eggs with half a pint of tea and some bread contained no albumin.

Lunch at 1 P.M. was composed of six eggs beaten up with one wine glassful of port-wine and six "digestive" biscuits. The urine passed 2½ hours after lunch, and after sculling two miles, gave a precipitate on the addition of nitric acid, which did not disappear on boiling. A turbidity also appeared on heating the urine in a water-bath to a temperature of 170°–175° F. The urine was diluted to a specific gravity of 1005, and a coagulation apparently took place about 180° F., but the haze was so slight that the exact point at which it appeared was difficult to determine.

Tea at 6 P.M. consisted of six raw eggs with a pint of tea. The urine next passed became very turbid on standing, but it filtered clear and was light coloured. It did not contain any albumin. The urine passed five hours after tea, and after three hours' active exercise in dancing, became very turbid on standing, the turbidity disappearing on heating and on the addition of nitric acid. The urine was filtered and a very slight trace of albumin was detected both by boiling and by the addition of nitric acid.

On the fourth day, October 19, the urine passed before breakfast contained no albumin.

Breakfast at 8 A.M. consisted, as usual, of six unboiled eggs, tea and bread. The urine contained no albumin.

Lunch at 1 P.M. consisted of five eggs beaten up and six "digestive" biscuits. No trace of albumin was found in the urine passed after lunch.

In the evening I gave up the egg-diet and returned to the ordinary college dinner.

During the day no exercise had been taken.

October 20.—No albumin was detected in the urine throughout the fifth day, although it was tested for repeatedly.

By the time the experiment was terminated, I felt qualified to journey through Equatorial Africa, where, as Mungo Park relates, "it is a prevalent idea among the inhabitants of the interior that



Europeans subsist almost entirely on a diet of raw eggs," and where they assembled in large crowds to see him perform his evening devotions and eat eggs.

From these details it will be seen that the experiment lasted for six days, during four of which the diet consisted exclusively of bread, tea, eggs, and a little wine. Sixty-five raw eggs were consumed. The albumin was tested for by boiling, and by the addition to the urine of a little strong nitric acid. Albumin was found on the first day after twelve eggs had been eaten, but it disappeared again in the evening, and did not reappear until the afternoon of the third day, after the consumption of forty-eight eggs. It was found again during the evening of this day, after which it disappeared, and had not returned when the experiment was discontinued. The albumin was on only one occasion in sufficient quantity to enable its point of coagulation to be determined, and in that case it was found to be  $170^{\circ}$  to  $175^{\circ}$  F.; and after dilution with distilled water to a specific gravity of 1005, it coagulated at about  $180^{\circ}$  F. In no case was there any opalescence when the urine was diluted with distilled water.

The occurrence of albumin in the urine was always observed after a considerable amount of exercise had been taken. This corresponds exactly with the theory advanced by the late Dr. Mahomed, who held<sup>1</sup> that "previous to the commencement of any kidney change or to the appearance of albumin in the urine, the first condition is high tension in the arterial system." Exercise, followed as it nearly always is by a slight chill, leading to a contraction of the superficial vessels and congestion of the internal organs, causes an increase in the arterial tension, whilst at the same time the amount of solids circulating in the blood is increased. The kidney therefore receives the blood-supply under greater pressure and the albumin transudes into the urine.

The experiments here detailed appear to be of importance at the present time, as they disprove the conclusions arrived at by Professor Oertel.<sup>2</sup> This distinguished observer states definitely that from his experiments on diseased persons and on animals, "egg albumin, given in whatever quantity, is not normally excreted as such by the kidneys, and does not cause albuminuria."<sup>3</sup> The positive result, however, which I have obtained in my own case appears to be of much greater value in the settlement of the question than the negative results of Professor Oertel, and my conclusions are borne out by many observers. Indeed, the list of

<sup>1</sup> *Trans. of the Royal Medico-Chirur. Soc.*, vol. lvii. p. 197 *et seq.*

<sup>2</sup> Ziemssen's "Handbook of General Therapeutics," London, 1887, vol. vii.

p. 95.

<sup>3</sup> *Op. cit.*, p. 103.

them<sup>1</sup> is already so long, that I hesitated for some time whether I should add to their number. It must be borne in mind that Professor Oertel was confessedly working with pathological tissues, and it appears that the conclusions which he has drawn must not be applied too rigidly to healthy glands. On the other hand, my experiment fully bears out the statement made by Stokvis, who says: "In the healthy man large quantities of fluid egg-albumen may be taken without a trace of albumen appearing in the urine." In a rabbit, the food can consist of egg-albumen only for three days, and in the dog eight or nine days, before albuminuria can be clearly detected. These times become greatly shortened when the albumen is injected into the rectum, so that Stokvis detected albuminuria under these circumstances in three days ("Maandblad der sectie voor Natuurwetenschappen," 1872, No. I.)

<sup>1</sup> Mialhe and Brown Sequard are quoted by Professor Parkes in his work "On the Urine," London, 1860, p. 184, as having performed the experiment. Hammond in his "Physiological Memoirs," Philadelphia, 1863, ate serum-albumin for ten days, obtaining albuminuria only on the eighth day and after experiencing severe symptoms of dyspepsia. Becquerel in *L'Union Médicale*, 1857, No. 155, p. 630, gives the details of his own observations; whilst Laudois in his "Text-Book of Human Physiology," translated by Stirling, ed. ii, vol. i. p. 426, records "the case of a young man who took the whites of fourteen to twenty eggs along with chloride of soda. Albumin was given off by the urine for four to ten hours thereafter. The amount of albumin given off rose until the third day, and ceased on the fifth day. The more albumin that was taken, the sooner the albuminuria appeared and the longer it lasted. The unchanged egg-albumin reappeared in the urine."



# CASES FROM DR. GEE'S WARDS.

WITH COMMENTS BY S. GEE, M.D.

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## NOTES ON TWO CASES OF CEREBRAL HÆMORRHAGE, AND A CASE OF JAUNDICE WITH DELIRIUM,

BY

E. J. SIDEBOTHAM, M.B.

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### CASE I.—*Cerebral Tumour with Hæmorrhage.*

William C., æt. 20, was brought to the Hospital on the evening of the 19th July.

About an hour previously he returned from his work apparently in perfect health. Shortly afterwards he went to the closet, and whilst there was heard to groan. On investigation he was found leaning on his arm, and on interrogation only answered "Oh, my head." A medical man was sent for, who found him comatose, in which condition he was brought to the Surgery, the pupils being pin-point with a divergent squint.

On recovering consciousness, which he quickly did, the pupils became natural; he held his right hand to the right side of his head, and in reply to questions only said "My head." He vomited a little, and had much hiccough and retching. The movements of the left arm and leg were very feeble, the knee-jerk being absent on the same side.

He was admitted into Luke Ward.

Throughout the night the hiccough continued; he took no notice when spoken to, and passed his urine unconsciously. There were wide hysteroid movements of the right limbs, purposeless as a rule, though he scratched his chest a great deal, and occasionally moved his left arm by aid of his right one.

When seen the following day, he was very flushed and was sweating profusely; the pupils were equal, and there was divergent squint; the membranæ tympani were natural, as also the optic disks. Nothing abnormal was detected in the thoracic or abdominal organs. The pulse was 110 and irregular; the urine contained a trace of albumen.



The hysteroid movements of the right side persisted, especially of the arm. The left limbs remained almost entirely motionless; occasionally there was movement of the arm, more rarely of the leg, sometimes rigidity of the arm. The left knee-jerk remained absent, the right normal. He ceased to swallow, still took no notice, and passed his urine under him.

His evening temperature was  $100.8^{\circ}$  and he was restless throughout the night.

On the 21st July his symptoms remained much as before; in addition there was occasional rigidity of both left arm and leg; the *tâche cérébrale* was very marked, and the belly was retracted. The temperature at night rose to  $103.2^{\circ}$ .

During the following afternoon there were several attacks of opisthotonos with spasm of the left limbs, also side-arching of the body, the concavity of the arch being to the left side of the body, but in one attack it was to the right.

23rd July.—Several slighter attacks of opisthotonos. The hysteroid movements of the right limbs and the occasional spasm of the left ones continued. The temperature was about  $104^{\circ}$ , and the pulse was regular as a rule.

The veins of the optic disks were very full, irregularly so, obscured in places by swelling of the disk. The smaller vessels were curved at the margin of the disk, which was ill-defined. These signs were more marked on the left side than on the right.

During the evening the hysteroid movements ceased. The whole body was periodically thrown into tonic spasm. He continued in the same state until his death, which occurred the following morning.

At the post-mortem examination a large irregular hæmorrhage was discovered in the right hemisphere of the brain, whose origin was obviously a tumour which was situated on the surface of the angular gyrus. The hæmorrhage extended from the surface of the brain to the posterior part of the internal capsule, and had neither burst into the lateral ventricle nor externally.

Mr. D'Arcy Power reported upon the tumour as follows:—

"On the under-surface of the pia mater, overlying the angular gyrus, is a large oval swelling situated on an artery. The vessels around the tumour are numerous and enlarged. The tumour itself measures, after being in spirit, an inch in length by three-quarters of an inch in diameter. It consists of a close plexus of blood-vessels, which measure on an average one-eighth of an inch in diameter, and are of sufficient size to take a coarse injection of gelatine and carmine. These vessels appear to be derived from the artery upon which they lie, reinforced by branches from the neighbouring

arteries. The tumour must therefore be classed as an angioma or nævus."

The spinal cord and other organs of the body were quite natural.

REMARKS BY DR. GEE.—With reference to this case, the well-known description by Abercrombie<sup>1</sup> may be quoted:—"The second form of apoplexy begins with a sudden attack of pain in the head; the patient becomes pale, sick, and faint; generally vomits, and frequently, though not always, falls down in a state resembling syncope; the face pale, the body cold, and the pulse very feeble. This is sometimes accompanied by slight convulsion. In other cases, he does not fall down, the sudden attack of pain being only accompanied by slight and transient loss of recollection. In both cases he generally recovers in a few minutes from the first effects of the attack, is quite sensible and able to walk, but continues to complain of headache; after a certain interval, which may vary from a few minutes to several hours, he becomes oppressed, forgetful, and incoherent, and then sinks into coma, from which he never recovers. In some cases paralysis of one side occurs, but in others, and I think the greater proportion of this class, no paralysis is observed." That this remarkable set of symptoms is characteristic of a hæmorrhage within the skull was known to Le Dran and Pott<sup>2</sup> long before the days of Abercrombie.

Guided by these principles, we believed that our patient was suffering from an intracranial hæmorrhage. The source of the bleeding, in persons of his age, is commonly found to be a ruptured aneurysm of one of the cerebral arteries; and it is known that apoplexy<sup>3</sup> of the kind in question, may arise in this way. Such we believed to be the nature of his illness. Mr. D'Arcy Power's report shows that the primary lesion was not an aneurysm, but the much more uncommon case of a meningeal angioma.<sup>4</sup>

#### CASE II.—*Cerebral Hæmorrhage.*

Albert M., æt. 8, was admitted into Luke Ward on the 9th September, with the following history:—

He was quite well up to the 5th, when he was drowsy, looked pale, and complained of headache. The following day he returned to school still dull and drowsy.

<sup>1</sup> Diseases of the Brain, 3rd edit., 1834, p. 204.

<sup>2</sup> Brodie: Injuries of the Brain, *Med. Chir. Trans.*, vol. xiv. p. 346.

<sup>3</sup> The phrase "ingravescent apoplexy" is, according to the strict meaning of the word "apoplexy," a contradiction in terms.

<sup>4</sup> Virchow: *Krankhafte Geschwülste*, vol. iii. p. 459.

On the 7th the headache became worse, and twitching of the left side of the mouth commenced, occurring about every hour.

8th.—To the twitching of the mouth was superadded occasional twitching of the left arm and of one or other leg, with dribbling of saliva and food. His bowels were confined, but he never vomited. At noon on this day he ceased to speak, and never spoke again.

On admission, he seemed very drowsy, lying with his eyes half-closed. He seemed for the first few hours to comprehend what was said to him, but he made no attempt to speak.

There were regular spasmodic movements of the lips and jaw, occurring every five or ten seconds; these movements periodically increased in frequency, and culminated in clonic movements of one (commonly the right) or both sides of the face, during which there was copious salivation, general restlessness, no deviation of the eyes, no protrusion of the tongue, no complete loss of consciousness. Each fit lasted for about one minute, and several occurred every hour.

The pulse was 128, and quite regular; the temperature was  $101.4^{\circ}$ ; the urine was free from albumen. All the organs of the body appeared natural to physical examination. The knee-jerks could not be obtained. There was slight *tâche cérébrale*.

On the 10th the twitching and fits still continued, and in addition there was occasional convulsion of the right arm, which was found to be paralysed. The retinal veins were shown by the ophthalmoscope to be very much distended by blood, but there was neither swelling nor dimness of the other structures of the optic disk.

The temperature in the evening rose to  $103.2^{\circ}$ .

On the 11th the convulsions were less marked, and there were rhythmical twitchings of the muscles of the back of the neck, instead of those of the face and lips as hitherto. His motions were passed unconsciously.

The evening temperature was  $100^{\circ}$ , the pulse  $88^{\circ}$ . During the night there were two attacks of convulsions affecting the face and right arm, after which the twitchings remained almost constant, the eyes being deviated to the right. At this time the patient ceased to swallow, and was afterwards regularly fed by the nasal tube.

At midnight the twitchings had ceased. There was occasional clonic spasm of the left fore-arm; there was slight rigidity of the left arm and leg.

The temperature was  $102.6^{\circ}$ , and the pulse was 88 and irregular.

Periodical convulsions of both arms occurred during the next day, but ceased during the evening, and were replaced by extreme rigidity of the arms, the legs being less affected. The temperature was the same as the previous evening, and the pulse was very irregular. The breathing was Cheyne-Stokes and very shallow.

On the 14th the rigidity continued, with occasional clonic spasm of both arms. The pulse was 100, extremely irregular, and the temperature was  $102^{\circ}$ .

Death occurred on this the tenth day of the disease.

The post-mortem examination was made by Dr. Tooth. The convolutions of the brain were much flattened, but there was no excess of fluid in the ventricles of the brain. The flattened convolutions seemed to indicate a swollen condition of the brain substance.

Microscopically the capillaries and small arteries of the pia mater were found to be dilated and filled with corpuscles and leucocytes. The pia mater surrounding them was infiltrated with small cells, which infiltration also affected the superficial brain substance, where some attempt at organisation appeared to have begun. The general brain substance presented numerous dilated capillaries with a few scattered leucocytes.

Three-quarters of an inch below the middle third of the left ascending parietal convolution, and immediately underneath the grey matter of the cortex, was a hæmorrhage measuring about three-quarters of an inch long by half an inch wide, the long axis being at right angles to the surface of the brain. No miliary aneurysms were found, nor was any other source of the hæmorrhage discovered.

The other organs of the body were all found to be normal.

REMARKS BY DR. GEE.—In reflecting upon this patient whilst he was living, it seemed convenient to begin with what was the most marked sign of disease, the convulsions. Were they due to disease of the brain, or were they sympathetic of disease elsewhere? If there were anything in the character of the convulsions themselves which could afford an answer to this question, it lay in the fact that they affected certain parts only of the body, especially the right arm and right side of the face. Add this consideration, that the right arm became palsied. Had this been all, the likelihood of the disease being situated in the psychomotor region of the cortex on the left side would have been great. But this was not all; the left side of the face was often convulsed, the left arm sometimes, and even the legs now and then. So that we were compelled to look upon the convulsions as more or less general; and no diagnosis of the seat or nature of disease can be made from the bare



fact of general convulsions. Nor did the palsy of the arm help much, because, assuming that it were due to disease of the brain, that disease might have been in any part of the pyramidal pathway. He did not speak, but he understood what was said to him until he became unconscious.

The only other symptom of much importance was found by examination of the retina. There was nothing seen which could be called optic neuritis, but the choked (or congested) condition of the disk was very great and certainly unnatural.

Upon these grounds, we believed that there was actual disease of the brain, the precise seat of disease being uncertain. What as to its nature? Acute cerebral disease in children eight years old is so seldom due to anything but tubercular meningitis, that this question had to be weighed in the first place. Convulsions sometimes mark the onset of tubercular meningitis,<sup>1</sup> but they are not so frequently repeated, and do not last so long as was the case with our patient. Moreover, the bad symptoms increased much more speedily than they do in tubercular meningitis. For these reasons we pronounced against that disease, and, doing so, were left without a diagnosis. The signs (such as they were) of disease of the psychomotor region were not incompatible with the notion of meningitis, but the course of the disease was no more that of simple purulent meningitis than of tubercular meningitis.

### CASE III.—*Jaundice with Delirium.*

Annie B., æt. 30, was admitted into Mary Ward on the 8th June 1887 with jaundice.

She owned to having drunk much beer. Her menstruation had been regular since the birth of her last child seven years ago. She had been losing flesh for the last few months.

Four weeks previously she had a fright, followed the next day by a feeling of malaise. Three days later she lost her appetite and felt sick. Seventeen days before admission she was noticed to be jaundiced, and the jaundice had steadily increased. She only complained of a little pain in the epigastrium and left hypochondrium.

On admission she was deeply jaundiced. The liver-edge was felt, sharp and even, a little below the costal arch, and the liver-dulness extended up to the upper border of the seventh rib in the nipple-line. The gall-bladder and spleen were impalpable. The urine was acid, of specific gravity 1018, containing bile and a cloud of albumen. The motions were clay-coloured; the temperature was subnormal. There was slight œdema of the legs, which continued throughout the illness.

<sup>1</sup> Reynolds' System of Medicine, 1st edit., vol. ii. p. 274.

12th June.—Patient vomited a little, and the following day did not feel well.

The urine contained much albumen and many bile-stained casts. The temperature at night rose to  $101^{\circ}$ , and during the night a papular erythema in irregular blotches appeared on the hands, fore-arms, and dorsum of the feet, which caused much itching.

15th.—Patient vomited again and slept badly. A sample of her urine was examined by Dr. Lewis Jones, who obtained from it crystals of leucin and tyrosin, but found that the amount of urea was only slightly diminished (21.5 grms. per litre).

17th.—The jaundice was much deeper. The rash was very marked, especially on the abdomen. There were several bruises on the legs. The urine was passed unconsciously at night. Patient was very delirious, struggling violently, and trying to get out of bed. Did not answer when spoken to, and kept ejaculating, "Oh, my! what shall I do?" Quieted with *cannabis indica*. The temperature was  $99.8^{\circ}$ , and was slightly higher the two previous nights.

The following day she was quite sensible and complained only of frontal headache and feeling queer. The rash was well out all over the body, and there were ecchymoses on the hands. The temperature at night was  $100.2^{\circ}$ . The motions remained clay-coloured.

19th.—There were more ecchymoses on the hands, and patient was again very delirious, both in the morning and again at night, necessitating a repetition of the *cannabis indica*. After this she was quite quiet and perfectly conscious.

On the 22nd the rash was much faded, the urine contained a little albumen, the stools were still clay-coloured, the jaundice was less.

Two days later desquamation began in large scales, and continued for several days. The temperature after this was very erratic for several weeks, rising at times to  $103^{\circ}$ ; but the general condition steadily improved.

The stools became slightly coloured on the 29th, and the urine became free from albumen and bile three weeks later. On the 2nd July patient vomited some thin acid fluid, containing clots of blood. She left the Hospital on the 10th August, free from jaundice and in good health. Throughout the illness she was treated with twelve minims of the tincture of *hydrastis canadensis*, which was given three times a day, and occasional doses of the *Hausus sennæ co.* of the Hospital pharmacopœia.

REMARKS BY DR. GEE.—The occurrence of delirium in the course of jaundice is a serious prognostic.<sup>1</sup> Even if the delirium can be assumed to be of the nature of delirium tremens, the

<sup>1</sup> Legg: On the Bile, Jaundice, and Bilious Diseases, p. 378.

gravity of the prognosis is not much less.<sup>1</sup> In the case of jaundice just narrated, delirium was not the only bad prognostic; it was accompanied with temporary albuminuria (tube casts in urine), and with ecchymoses on the hands. Moreover, during this state of things, the temperature, which had before been low, rose to a febrile point. The opinion which I formed at the time concerning the nature of the patient's disease was this: that her liver was probably cirrhotic, and that an acute atrophy of the glandular epithelium was going on. Her recovery may perhaps be deemed to contradict this notion. Giving up this opinion, we should have to look upon the delirium and jaundice as being wholly independent of each other, two diseases accidentally associated, and not two symptoms of one and the same antecedent lesion. But we have to account for the temporary albuminuria and the purpuric tendency; are these to constitute a third and a fourth accidental complication of the jaundice? On the whole, it seems to me that the original opinion is most reasonable, and that the woman recovered from an attack of icterus gravis.

## NOTES ON TWO CASES OF INTRACRANIAL TUMOUR.

BY

E. MANSEL SYMPSON, M.B.

### CASE I.—*Cerebellar Tumour—Tubercular.*

Ernest D., æt. 13, was admitted to Luke Ward, September 18, 1887.

*History.*—For last four months has complained of pain in head, not limited to any special spot; continuous, with paroxysms. Gradual loss of power of sight, which in the last three days has almost entirely gone.

"Fainting-fits" occasionally, wherein he becomes rigid, unconscious for five or six minutes; is sick, and quickly well thereafter.

Has staggered in walking for some weeks.

His bowels are generally costive; he passes motions sometimes unconsciously.

*Family history.*—Father has "delicate chest."

*Present condition.*—Eyes: pupils greatly dilated; they react

<sup>1</sup> Legg: On a Case of Delirium Tremens complicated by Jaundice. St. Bartholomew's Hospital Reports, vol. xvi. p. 107.

slightly and slowly only to strong light. The disks are white and puffy; the vessels inside very small, outside large and tortuous.

Lungs and heart natural.

No paralysis of limbs.

Knee-jerks exaggerated and equal; no ankle-clonus.

Supinator reflex is well marked in both fore-arms.

The distal end of the metacarpal bone of left thumb is enlarged; there is some chronic inflammation around that joint, and a sinus discharging a little pus, which leads to carious bone.

His incisor teeth are notched and bare of enamel—strumous?

Urine neutral, sp. gr. 1030, with no albumen or sugar.

September 21.—Headache all night, with vomiting this morning; he wakes occasionally with a sharp scream.

September 23, 7 A.M.—Screaming, rigid, unconscious, with nystagmus for five minutes; passed a motion and urine under him.

September 27.—Another fit of similar character at 8.30 A.M., save that there was no nystagmus, and that his face was livid. Headache all night. Sore on thumb looking healthier.

September 28.—Urine acid, sp. gr. 1025; no albumen or sugar. No ankle or patellar clonus.

October 1.—Headache again all night; nausea in morning.

October 6.—Knee-jerk exaggerated, chiefly on right side. Passes his water now and then into the bed.

October 11.—At 12.30 P.M. gave a sharp, sudden cry; his head was greatly and rigidly retracted; hiccough and retching continued for five minutes; his pupils were dilated widely and equally; there was no nystagmus; his hands and feet moved a little, but there was no tonic or clonic spasm or lividity of face. He vomited at the close a little saliva. He had a similar fit at 3 A.M.

October 20.—Ankle-clonus now well-marked both sides.

October 21.—Two more fits at 7 and 11.45 A.M.

October 22.—Another at 7 A.M. Severe headache all night.

October 24.—Another fit at 1 A.M.

October 26.—Has had two more fits in the last twenty-four hours. Round the sore on thumb the granulations are exuberant.

November 3.—Headache all night, followed by a fit and vomiting.

Frequently at night wakes up with a cry, wanting to turn over; does so, and is immediately asleep.

The muscles at back of neck generally stiff.

He left the Hospital on November 6. His temperature was subnormal during his stay, appetite fairly good, except towards the end.

*Treatment.*—He was put on increasing doses of potassium iodide; morphia draughts and subcutaneous injections were given when his headache was very severe.



He lived at home in Islington till he died, on April 12, 1887, the fits having become more frequent towards the close.

*Post-mortem.*—The surface of the hemispheres was flattened; the tuber cinereum, semi-translucent, was bulged out to the size of a small marble; but the membranes seemed perfectly healthy, save over the upper and inner surface of the right lateral hemisphere of the cerebellum, where was an evident swelling, over which the pia mater was whitened, with tiny granules scattered about, and the cerebellar markings indistinct.

On opening the brain, the lateral and third ventricles were full of cerebro-spinal fluid and greatly dilated.

There was no apparent closure of the foramen of Magendie.

On cutting vertically through the right lateral hemisphere of the cerebellum, which was uniformly enlarged, a hard caseous mass was seen, occupying nearly the whole of the posterior two-thirds of the section. It was irregularly oval in section, measuring one inch and a quarter in its long diameter by one inch transversely. A zone of softened tissue a quarter of an inch wide surrounded the tumour, the softened area being of much greater extent in the neighbourhood of the anterior and upper border of the growth. Microscopical examination showed the tumour to be a mass of caseating tubercle.<sup>1</sup>

The lungs were not examined.

The metacarpal bone of the left thumb was carious at its distal end, and on being cut into was full of caseating matter.

REMARKS BY DR. GEE.—The diagnosis of cerebellar tumour depended in the first place upon the three cardinal signs of intracranial tumour, namely, headache, vomiting, and optic neuritis. Next came signs which seemed to point to the cerebellum as being the seat of the disease, namely, stiffness of the neck and staggering in walking.

The common kinds of cerebellar tumours are three—tubercle, glioma, and abscess. The strumous disease of the thumb made tubercle the most likely, and the more so as there was not the usual cause of abscess, to wit, otorrhœa.

#### CASE II.—*Cerebral Abscess with "Jacksonian" Epilepsy.*

Rose D., æt. 20, a servant, was admitted to Mary Ward, December 24, 1886.

*History.*—Three weeks ago severe epigastric pain, vomiting, and headache.

December 11.—Complained of numbness in right arm and leg. Temperature was raised to 102.5° at this time.

<sup>1</sup> Specimen in the St. Bartholomew's Hospital Museum, 2502 (c).

December 12, 5 A.M.—Epileptoid convulsion; twitching of right side of face, going on to right arm and leg; head drawn to right side; conjugate deviation of eyes to right. Bit her tongue slightly. Did not cry out. No unconsciousness left after fit. Lasted five minutes. Second fit at 2.30 P.M., much the same characters.

Since has had thirteen similar fits on one day, at intervals of two hours or so.

Last fit eight days ago—December 16.

After first fit partially aphasic; said, "I wish I could speak." After second only said, "Ice;" and when hurt once, "Oh, I say."<sup>1</sup>

*Family history.*—Paternal grandfather died of phthisis; none of nervous disorders.

*Present condition.*—Pale, dull, listless. Some palsy of right orbicularis, of right side of mouth (shown when laughing); food remains pouched in right cheek. Heart and lungs natural. Pulse 108; respirations 37.

*Legs.*—Left: no patellar reflex. Right: no wasting, rigidity, sole-reflex, or patellar reflex. Very little power left.

*Arms.*—Left: natural. Right: no power; reflexes natural.

*Electrical reactions.*—Faradic natural in arm, leg, and face.

*Speech.*—Has only said "I say" since admission, but understands perfectly all that is said to her.

*Eyes.*—Pupils equal; react to light; ophthalmoscopically, disks swollen, irregular, veins engorged; some retinitis also.

December 30.—The temperature has only been three times below 100° since admission.

Swallowing now quite regained for fluids. Pulse 140, regular; respirations 42.

No abnormal sounds in chest. Pain on the left side at base.

*Right arm.*—Slight rigidity; flexed at elbow; flexed fingers and thumb; very slight supinator reflex.

*Left arm.*—Natural.

*Right leg.*—Movement pretty good; no patellar reflex; ankle-clonus present.

*Left leg.*—No patellar reflex or ankle-clonus. Left calf three-quarters of an inch larger than the right.

*Urine, sp. gr.* 1037, acid, turbid, with urates; a trace of albumen.

December 31.—Temperature: morning, 100.6°; evening, 104°. Left base dull to percussion.<sup>2</sup>

<sup>1</sup> These particulars were obtained from the doctor who saw her before admission to the Hospital.

<sup>2</sup> Dr. Hughlings Jackson saw her with Dr. Gee about this time, and agreed entirely with the diagnosis of a tumour in the cortex, about the bottom of the fissure of Rolando, on the left side of the brain.

January 1.—Temperature: morning, 103.6°; evening, 103.6°. Marked dulness left base; fine râles and bronchial breathing. Respirations 54, shallow; pulse 120, weak. Left cheek flushed; takes well.

January 2.—Temperature: morning, 103.4°; evening, 103°. Sick repeatedly after medicine. Does not take so well. Temp. 104.2° at midnight.

January 3.—Physical signs much the same. Enema had good effect. Urine very albuminous.

January 4.—Fair night; takes well; skin moist and warm. Temperature: morning, 103.6°; evening, 101.8°. Pulse 130, dicrotic; respirations 50.

January 5.—Temperature: morning, 101.8°; evening, 101.4°. Urine very albuminous. Subtympanic resonance, left apex in front. Purpuric spots on abdomen. Left leg and ankle swollen.

January 6.—Temperature: morning, 102.2°; evening, 102.6°. Little sleep at night. More swelling of left leg; pitting on pressure; urine acid, sp. gr. 1020, cloud of albumen.

January 7.—Temperature: morning, 103°; evening, 103°. Worse. Urine neutral, non-albuminous.

January 8.—Dulness and bronchial breathing still over left base. Exploring syringe inserted in fourth interspace mid-axillary line, with no result. Is rather noisy. Temperature, 10 A.M., 104°. Had a bad night; breathing more embarrassed.

Died at 11.5 A.M.

*Treatment.*—On the 20th she was ordered a mixture of potassium iodide and syrup of the iodide of iron three times a day. Changed afterwards to Liq. hydrarg. perchlor. ʒss. ter die. When the pneumonia came on she took Hst. ammoniæ acetatis for a short time. For her sleeplessness at night she had Hst. morphinæ and twenty minims of Tr. cannabis indica.

*Post-mortem.*—*Lungs:* Left consolidated, but very rotten. About a pint of bloody fluid in the left pleural cavity.

*Kidneys.*—Distinct evidence of parenchymatous nephritis.

There was no otitis or thrombosis of sinuses, but a swelling was seen on taking off the dura mater at the bottom of Rolando's fissure, on the left side. Cutting into the left cerebral hemisphere transversely, through the upper part of the ascending frontal convolution vertically downwards, an abscess is seen situated in this convolution beneath the pia mater, and a thin layer of brain substance a quarter of an inch above the fissure of Sylvius. It is conical in section, extending into the brain substance for five-eighths of an inch; its base is irregularly notched. The cerebral substance for a considerable distance round the abscess has been so

much inflamed that the pia mater is adherent; the membrane therefore has been left *in situ*.<sup>1</sup>

REMARKS BY DR. GEE.—The signs of intracranial tumour were the same as in the last case, namely, headache, vomiting, and optic neuritis. The signs which indicated the situation of the lesion were, in the first place, aphasia; next, epileptoid fits, beginning by twitching of the right side of the face; and lastly, hemiplegia of the right side. Trusting to these diagnostic signs, we were preparing to trephine the skull over the hindmost part of the third frontal convolution and the neighbouring part of the anterior central (ascending frontal) convolution on the left side, with the intention of removing any tumour or opening any abscess found in that position. The post-mortem examination showed that the operation would have been successfully performed had not pneumonia carried the patient away before it could be undertaken.

<sup>1</sup> St. Bartholomew's Hospital Museum, 2484 (a).





# THE RATE OF COOLING OF THE BODY AFTER DEATH.

BY  
F. WOMACK.

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The following paper is a continuation and development of one read before the Abernethian Society about two years since, during which time the methods of experiment then indicated have been extended to many more cases.

The object of the investigation was, in the first place, to determine whether the rate of cooling of the body after death was at all comparable with the cooling of a liquid contained in a thin solid vessel by radiation and convection from its surface; and if so, to endeavour to calculate with some exactness the time of death by observation of the temperature subsequently.

The principal observations on post-mortem temperatures seem to have been made by Drs. Wilks and Taylor<sup>1</sup> at Guy's Hospital in 1863. The temperatures were taken in a hundred cases on the abdominal surface, at varying times after death, the causes of death being also various. About seventy cases were available for comparison, and from these the following figures were obtained:—

Time after Death.	Mean Temp. of Abdomen.
2 to 3 hours.	77° F. (25° C.)
4 to 6 „	74° F. (23°.3 C.)
6 to 8 „	70° F. (21°.1 C.)
12 „	69° F. (20°.5 C.)

Similar observations have been made by Dr. F. Niderkorn,<sup>2</sup> 135 cases having been examined, the causes of death being

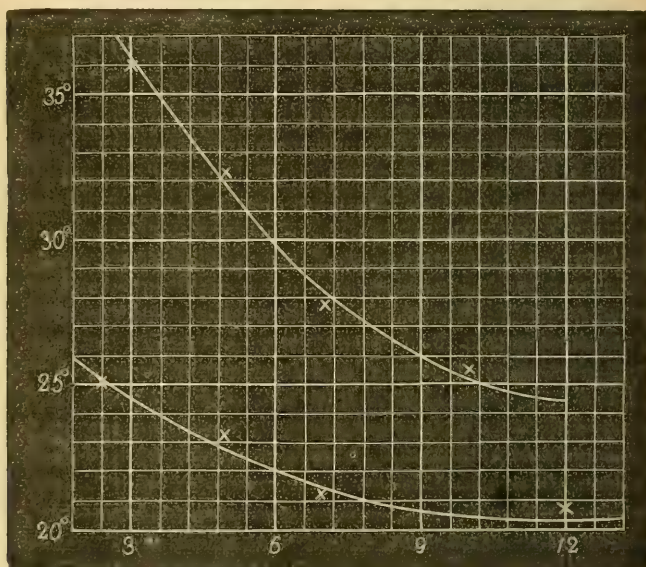
<sup>1</sup> Guy's Hospital Reports, October 1863, p. 184 *et seq.*

<sup>2</sup> De la Rigidité cadaverique chez l'Homme. Paris, 1872.

various, the temperatures, however, being taken in the axilla. The results obtained were—

Time after Death.	Mean Axillary Temp.
2 to 4 hours.	96°.9 F. (36°.1 C.)
4 to 6 „	90°.2 F. (32°.3 C.)
6 to 8 „	81°.7 F. (27°.6 C.)
8 to 12 „ or more.	77°.9 F. (25°.5 C.)

Both these sets of figures show clearly that the rate of fall of temperature is greater at first than later after death, as may be seen by reference to the following diagrams, in which the



above results are plotted out with temperatures for ordinates and times from death as abscissæ.

It will, however, be seen that the observations are not sufficiently frequent to enable the curve to be drawn with any approach to accuracy, and also that the observed temperatures follow one another irregularly. This last would not, however, be unexpected, since the observations are not obtained from one body.

In the following experiments the method of procedure adopted was this. The temperatures were taken on the abdominal surface by specially constructed thermometers. The thermometers were mercurial, the bulbs flattened and made of

very thin glass, and when applied were strapped on to the abdomen by white adhesive plaster. This exposes a feebly radiating surface to the atmosphere, so that in a few minutes the temperature indicated by the thermometer may be taken as that of the abdominal surface. The abdomen was chosen principally because the parietes are there frequently thin, and because of its nearness to the most important heat-producing viscera. Generally after strapping on the thermometer the body was covered again by a linen sheet, leaving only the stem of the thermometer exposed. The thermometers could be read easily to  $\frac{1}{40}$ th of a degree centigrade, and by estimation to less than this.

It is possible that the observations could be made with greater ease by an instrument such as Immisch's avitreous thermometer, especially if it were made self-recording and more sensitive than it usually is.

By taking temperatures of the abdomen during life an average surface temperature of  $36.2$  was obtained.

It will be necessary to state the physical problem to follow the calculations made in the cases given in the latter part of this paper. Admitting the rough analogy of the body post-mortem with a hot liquid contained in a thin vessel, let

$S$  = total area of surface of the body in square centimetres.

$E$  = emissivity of the body-surface.

Then  $ES$  = heat lost per second from total body-surface when it is  $1^\circ$  hotter than the surrounding atmosphere and enclosure.

Let  $\theta$  = excess of temperature of body-surface over surrounding enclosure.

Then during an indefinitely short time, denoted by  $dt$ ,

$$\text{heat lost} = ES.\theta.dt.$$

In consequence of this loss of heat from the body, its temperature will have decreased by an amount which may be denoted by  $-d\theta$ ; hence if  $M$  = total mass of the body, and  $C$  its mean specific heat,

$$\begin{aligned} \text{The heat lost} &= -MC.d\theta \\ &= ES.\theta.dt \\ -\frac{d\theta}{\theta} &= \frac{ES}{MC}.dt \end{aligned}$$

It is obvious that in any one experiment on the body it would be impossible to determine the quantities  $E$ ,  $S$ ,  $M$ , or  $C$ , but



they may be treated collectively and denoted by the letter  $k$ . Hence,

$$-\int \frac{d\theta}{\theta} = k \int dt$$

$$\theta = e^{-kt}$$

This is equivalent to saying that if the temperatures were observed at intervals of time equally distant apart, the excess of temperature of the body-surface over that of the surrounding atmosphere (supposed constant) would decrease as the terms of a diminishing geometric progression.

Considering how far the human body is from being strictly analogous with a cooling liquid in a thin-walled vessel, several experiments were first made to determine how nearly the curve obtained by frequent observations extending over an average time of six hours agreed with the logarithmic curve expressed by the above equation. It was found, after correction for varying temperature of the dead-house, that in all cases the curve obtained was slightly flatter than the theoretical calculation implied; that is, that the body did not cool so rapidly as a liquid would do under similar conditions. The equation to the curve was calculated by actual measurement, and found to be given approximately by the empirical expression—

$$\theta = a^{-\alpha t + \beta t^2}$$

The discrepancy was not sufficient, however, to preclude the desirability of the method being tried.

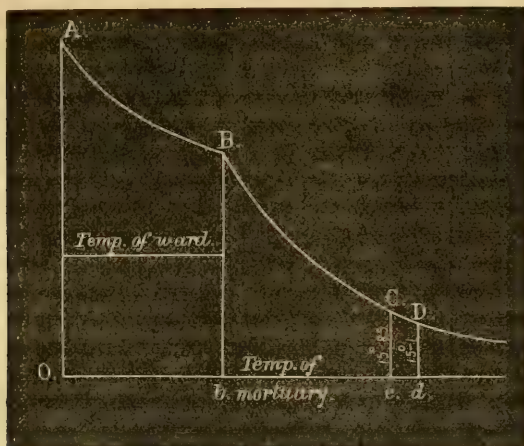
The following are the figures of one case:—

Female. Name not obtained. Cause of death, heart disease and dropsy (Faith Ward).

	Time.	Temp. Axillary.			
Jan. 25.	8 P.M.	101°.6 F. (38°.6 C.)	} Temp. of ward	15°.5 C.	
„ 26.	5.5 A.M.	Normal (37°.2 C.)			
„ „	Death.				
„ „	9 A.M.	{ Body removed to mortuary	{ Temp. of mortuary 9° C.	{ Excess unknown.	
„ „	12.30 P.M.				Temp. = 24°.85 C.
„ „	1 P.M.	Temp. = 24°.1		{ „ = 15°.1 C.	

The problem has to be worked in two parts, viz., first to determine the temperature of the body when brought into the mortuary; secondly, to find at what time previous to this the excess of temperature of the body over that of the ward had been 20°.7, corresponding to a normal abdominal temperature of 36°.2. The necessity for this working is entirely owing to the

different temperatures of ward and mortuary, as shown diagrammatically in the adjoining woodcut, where  $AB$  represents the



fall of temperature in the ward from death at  $A$  to removal to mortuary at  $B$ , and  $BC$  represents the fall of temperature (more rapid at first) after removal to mortuary.

(1.) To determine  $Bb$ , the temperature when brought into mortuary.

From the above equation

$$k = - \frac{d\theta}{\theta \cdot dt}$$

the fall of temperature or  $-d\theta = .75$ , the time between the observations or  $dt = 30$  minutes, and the excess  $\theta = 15^\circ.475$  as an average; therefore

$$k = .00161$$

Integrating the above equation between limits,

$$t_1 - t_0 = \frac{1}{k} \cdot \log_e \frac{\theta_0}{\theta_1}$$

Now  $t_1 - t_0$ , or the time between  $B$  and  $C$ , is known to be approximately 210 minutes; hence

$$210 = \frac{1}{.00161} \cdot \log_e \frac{\theta_0}{\theta_1}$$

$$\log_e \frac{\theta_0}{\theta_1} = .3381, \text{ and } \log_{10} \frac{\theta_0}{\theta_1} = .1468$$

$$\text{finally } \frac{\theta_0}{\theta_1} = 1.402.$$

Consequently  $\theta_1$  being  $15^{\circ}.85$ , the temperature excess on being brought into the mortuary =  $22^{\circ}.22$ , and the actual body temperature =  $31^{\circ}.22$ .

(2.) *To find the time from death to removal from ward.*

In the ward the body was covered by bed-clothing, and in consequence it radiated less rapidly. A rough estimate of  $k$  was obtained by covering the body when in the mortuary with several layers of sheeting, and taking the temperatures at intervals of fifteen minutes. This gave  $k = .00112$ . Also the excess of temperature at death being taken as  $20^{\circ}.7$ , and when removed  $15^{\circ}.7$ . Hence, as above—

$$\left. \begin{array}{l} \text{Time of death before removal} \\ \text{to mortuary . . . . .} \end{array} \right\} = \frac{1}{.00112} \times \log_e \frac{20.7}{15.7} \text{ minutes} \\ = 246 \text{ minutes.}$$

This would give the time of death to be by estimation six minutes to 5 A.M. (with an uncertainty of some five minutes taken to remove the body from the ward), while by inquiry the time of death was ascertained to be five minutes past five.

This example is not a favourable one, and even closer approximations have been made in some cases. In this one there were several uncertain elements, especially the assumed constancy of ward temperature and of that of the mortuary, the altered radiating power of the body when covered more effectually, and the unknown time of transport of the body.

In any medico-legal case the calculation would be much simplified, as the covering of the body would probably not be varied, and there would be no sudden change in the temperature of the surrounding atmosphere. Hence the calculation would be made at once from two or three observations of temperature.

The calculation was very simple, and the whole estimate from beginning to end could generally be made in little more than half an hour in several cases of death by accident when the body was taken direct to the mortuary. In these cases also, as would be expected, the estimated time of death was generally found very near to the known time of its occurrence. The following case is illustrative:—

G. F. was brought into Hospital dead, January 1881, the cause of death being fractured skull, which had been crushed between the top of a goods van and an archway.

The following temperatures were taken:—

P.M.	Temperature.	Mortuary.	Excess of Temperature.
2.20	25°.375	7°.1	{ 18°.275
2.50	24°.575		{ 17°.475

$$\text{Hence } \kappa = \frac{.8}{30 \times 17.875} = .00149$$

Therefore if the normal abdominal temperature is taken as 36°.2, corresponding to an excess of 29°.1, time of death antecedent to 2.20 P.M.

$$= \frac{1}{.00149} \times \log_e \frac{29.1}{18.275}$$

$$= 312 \text{ minutes.}$$

This would make the time of death eight minutes past nine. The lad was brought into the Hospital at fifteen minutes past nine.

It would be easy to express more closely by mathematical formulæ the conditions of the problem, taking into account that the temperature of the body is considerably higher interiorly than on the surface, and also the conducting power for heat of muscular and other tissues, but considering the elements of uncertainty which in some cases at least exist, it was not thought desirable to get a greater degree of theoretical accuracy than the above.

The principal difficulties are these—

- (a.) The unknown temperature at death.
- (β.) Development of rigor mortis, and post-mortem rise of temperature.
- (γ.) Varying temperature of the atmosphere.
- (δ.) Varying locality of the body.
- (ε.) Varying condition of covering.

(a.) The fact of the temperature at death not being definitely known would not be likely to present any serious difficulty in the determination subsequently of the time of its occurrence, since in the majority of cases there would be no pathological temperatures to take into account. Supposing, however, that in health there might be so large a range of temperature as 2° centigrade or 3°.6 Fahrenheit; this uncertainty would introduce at the most a possible error of one hour, and probably in general much less than this. The nature of the variations can also to some extent be predicated, since in a well-nourished person the temperature is a little lower, while in thin persons it is a little higher, than the mean.

(β.) The development of rigor mortis introduces no source of error. It is true that in many of the cases actually examined



the early occurrence of rigor mortis introduced an uncertainty of the time when the body had its maximum temperature, and was one of the causes of the discrepancy between the calculated and ascertained time of death; but in cases of sudden death of a healthy individual rigor mortis is developed late, and it would probably be subsequent to inspection and examination of the body; and even when it does occur, the variation of body temperature produced by it is negligible.

In connection with this it is worthy of notice that Drs. Wilks and Taylor observed, in one case of death from erysipelas and Bright's disease, the temperature after two hours was  $72^{\circ}$  F., after four hours  $75^{\circ}$  F., and after six hours  $72^{\circ}$  F. again.

( $\gamma$ .) The variation of temperature of the external medium is in general progressive. If, then, the curve is drawn upon the supposition of a constant external temperature, its form would differ slightly from what it should have been. Bearing in mind that the tangent of the slope of the curve represents the rate of fall of temperature, it is simple to alter the slope of the curve to accord with the different excess of temperature, and thus the time of death may be ascertained by a geometrical construction. The mathematical calculation becomes more complicated.

It has been found, however, that unless the variation of temperature is as much as  $8^{\circ}$  to  $10^{\circ}$  C., the discrepancy produced is not considerable.

( $\delta$ .) The method of avoiding this difficulty is seen by reference to the details of the calculation in Case I.

( $\epsilon$ .) In any medico-legal case a change in the covering of the body made at an unknown time subsequent to death would introduce an insuperable obstacle to the calculation. The rate of radiation of heat from the body is so largely dependent on the nature and thickness of the covering, that exposure of the naked body in an open space with a good current of air would cool it as much in an hour as it would fall in six hours if covered with ordinary clothing. It is, however, improbable that the covering of the body would be altered after death.

Finally, it may be mentioned that since the beginning of the observations 118 estimates have been made, as above, of the time of death, with the following results:—

In 57 cases the error did not exceed 25 minutes.

„ 33	„	„	40	„
„ 12	„	„	60	„

And in the remaining 16 the error was greater than 60 minutes. In most of these last there was an abnormally high temperature at death, and probably a post-mortem rise of temperature.

# SOME CLINICAL FEATURES OF THE URIC ACID HEADACHE.

BY

A. HAIG, M.B.

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It may perhaps be as well to begin with a definition, as almost every one who reads the above heading will ask, "What is the uric acid headache?"

I would say, then, that it is a headache which recurs at intervals of three days to a week, or from that to one or several months, for a large number of years in the life of an individual. It lasts from twelve to twenty-four hours, and then goes completely away till the end of the interval. The attacks are rendered less frequent and less severe by a diet poor in nitrogen. There is often a family history of headache, or gout, or both.

In some cases this headache has been found to be exactly contemporaneous with a large excretion of uric acid (see my paper in the *Medico-Chirurgical Transactions*, vol. lxx.), and I expect that further investigation in the future will show that all cases of this form of headache bear a similar relation to uric acid excretion: hence the distinctive name I have ventured to give it.

And further, in the cases that have this relation to uric acid excretion, an appropriate dose of an acid, as nitro-hydrochloric, will both stop the excessive excretion of uric acid and cure the headache in the space of one to one and a half hours. See my paper on "Variations in the Excretion of Uric Acid produced by the Administration of Acids and Alkalies."<sup>1</sup> As regards the effects of diet and the relationship to gout, I would refer to my papers in the *Practitioner*.<sup>2</sup>

Some points in this definition may require modification, but on the whole I expect that it will be found sufficiently true to be used as a starting-point.

This form of headache has been described by numerous observers, but has not, I think, been sufficiently marked off from others of different nature that at times appear to resemble it; and though nitro-hydrochloric acid has been used in its treat-

<sup>1</sup> *Journal of Physiology*, vol. viii. Nos. 3 and 4.

<sup>2</sup> August 1884 and March 1886.

ment, it has been given empirically, without any knowledge of its mode of action, of the proper dose, or the time at which it should be given.

And as my researches on this form of headache, extending now over a considerable number of years, have thus led me to regard it from a different, and, I hope, more definite and satisfactory, point of view from that taken by those who have previously described it, I thought it might be interesting if I were to give the clinical histories of some of the cases I have observed, and use them to emphasize the chief points in diagnosis which I have found it necessary to attend to.

Given a headache corresponding in the main with the above definition as regards history and symptoms, if the urine is examined, and excessive excretion of uric acid is found to accompany the headache, the diagnosis is made, and the treatment by acids and diet will probably be satisfactory. But apart from this rather troublesome examination of the urine, I think that the history and symptoms are often sufficient for diagnosis.

I have notes of fourteen cases of this form of headache taken in the last three years; some of these were only seen once, or are so short as to be of little value. There are nine females and five males, the youngest 10, the oldest 55 years, the majority being between the ages of 20 and 40.

It is only recently that I have had such means of fortifying my diagnosis as are afforded by the urinary reactions or the curative effects of acids, and some of my previous cases are possibly not members of this uric acid headache group, but they will serve to illustrate the difficulties of diagnosis apart from these tests.

In the above period I expect that I have seen three or four times this number of headaches due to other causes, as constipation, neuralgia, anæmia, catarrh, errors of refraction, ear-disease, intracranial disease, &c., of which I have not thought it necessary to take notes, and I often go for a long time without meeting with a case of the kind I want; not that these cases are really rare, but perhaps many of the patients, having suffered nearly all their lives, do not think it worth while to come to a hospital.

In private and among friends I have in the same period seen several cases of this headache which have derived much benefit from the diet treatment, and I have heard from several practitioners of their having similar cases, some of these showing by their family history the relationship of this form of headache to gout.<sup>1</sup> To save space, I have put my cases into the form of a table, with headings corresponding to the more important points in my definition, and I shall now give a fuller history of some of the more important cases from the table.

<sup>1</sup> See second paper in *Practitioner*, March 1886.

No.	Name.	Sex.	Age.	Subject to Head-ache	Has one in	Fam. Hist. of Headache.	F. Hist. of Gout.	Hist. of other Diseases.	Result.
1	W. D.	M.	55	40 years	3-4 wks.	No note.	No note.	No note.	Impd. on diet.
2	C. W.	F.	34	Many years.	No note.	do.	do.	do.	do.
3	M. Y.	F.	26	do.	Every 2 wks.	do.	do.	do.	do.
4	W. C.	M.	14	Since quite little.	Every wk.	do.	do.	do.	Sl. impd. on diet.
5	A. R.	F.	23	All life.	Every 2 wks.	do.	do.	do.	Impd. on diet.
6	A. G.	F.	18	do.	Every 3 wks.	{ M. and several B. } { and S. have it. }	do.	do.	Impd. on diet.
7	R. G.	F.	27	For years.	Every wk.	No note.	No hist.	M. has $\phi\theta$ .	Temp. impd. on diet.
8	E. E.	F.	30	do.	7-10 days.	M. and 1 S. have it.	do.	No hist.	Impd. on diet.
9	J. E.	M.	21	2 years.	7-8 days.	No hist.	{ M.'s F. joint } { pains. }	M. d. $\phi\theta$ .	Only seen once.
10	F. F.	M.	10	{ Some years, } { hemieranal. }	No note.	No note.	{ F. has "Rh. } { gout." }	No hist.	do.
11	E. D.	M.	22	{ For years, and } { epilepsy. }	Often every wk.	{ M. and others of } { fam. had it. }	No hist.	do.	Much impd. by diet.
12	M. W.	F.	27	do. do.	No note.	No note.	No note.	No note	Impd. on diet.
13	M. P.	F.	32	No note.	Every wk.	do.	do.	do.	Impd. by acids.
14	E. D.	F.	37	For years.	Every 2 wks.	M. and 1 S. have it.	{ F. had gout } { in his leg. }	No hist.	do.



The first case of special interest is No. 4.

W. C., æt. 14, a butcher-boy. Always had headache since quite little, but it has been worse the last three months, since he has been at the butcher's. He has been eating more meat during this time.

July 8, 1885.—*Present condition.*—Complains of a frontal headache. Has one headache every week. Tongue, slight pale fur. Bowels open. Takes food well.

July 15.—Has had no meat since the 8th, and no headache; only a threatening of one on 11th.

He was not seen again till May 26, 1886, when he said that he took no meat, but still had headaches. He was, however, not so bad, and never was as bad as when taking much meat at the butcher's, whose service he had left.

He is now taking no milk or fish to replace the meat, and he was told to alter his diet in this respect.

No. 9.—J. E., æt. 21, June 9, 1886, an office-clerk, complains of headache, of which he has had one every seven to eight days for the last two years or so.

Is an only child. His father died suddenly of heart-disease. His mother died of phthisis. His mother's father had joint-pains when an old man. One of his mother's brothers "suffers with his liver."

Patient is myopic and wears glasses continually, and often has specks before his eyes. He sees flashes and zigzags of light before the headache comes on, and when the headache is violent there is sickness.

He takes meat, and occasionally a little beer, but he gave up cheese, as he found it made him worse.

No. 11.—Edward D., æt. 22, June 1886. This patient had previously been under treatment for fits (epileptic), relieved by bromide of potassium. He now complains of headache; has suffered from it for years; often one in a week. Other members of his family suffered from it, and his mother did; she died of phthisis.

He was first put on Hst. quass  $\bar{c}$  ferro and it appeared to make him worse. He was then put on diet.

August 4.—Says he has been keeping to the diet, and his headaches have been both less frequent and less severe. He said he did not want any medicine, but would come and see me from time to time, or if the head became more troublesome.

September 1.—Says his head has been rather more troublesome again, but he has been for the most part abstaining from

meat. It is, however, decidedly better all round, and he does not complain as to the fits.

He was given some salicylate of soda to ward off the attacks.

October 6.—Says he is much better, and has had little or no headache of late, and he seems hopeful. He is somewhat tired of fish, and I advised him to vary his diet with rabbit, chicken, or occasional eggs. Has found salicylate decidedly useful.

November 24.—Says he has had several “faint fits” lately, and he was given some bromide for these.

June 8, 1887.—Says he has been on the diet ever since I last saw him, and has been better in respect of the headaches. He had had several headaches last year, but not one this year as yet. Was told to take rather more milk, and to go on with the diet for the rest of his life. No mention of fits.

Pulse tension very slightly plus. Weight now 8 st. 12 lbs.; October 1886, 8 st. 10 lbs.

*Note.*—This seems to show that in this case, as in my own, the improvement under diet treatment is progressive, and the immunity from headache more complete the longer it is kept up.

No. 12.—Mary W., æt. 27. This was a case of headache like the others, but I have few details, as they were accidentally lost. I give this case because I examined the uric acid urea relationship in it.

In addition to headache she has fits, which are kept in check by bromides.

July 23, 1887.—She brought urine of July 22d, passed between the hours of 9 and 11 A.M. during a headache, which got better about 12 noon, and came on again in the afternoon.

Urine, 235 cc. (large excretion for two hours), high colour, 1023; total acidity, 15 grs. oxalic acid; total uric acid, 3.3 grs. Total urea, 63 grs. Relation of uric acid to urea, 1-19.

July 30.—Says headache has been better this week. Has brought the urine passed between 9 and 11 A.M. on 29th, when there was no headache. Urine, 422 cc. (again large excretion); total acidity, 7.1 grs. oxalic acid; total uric acid, 1.5 grs. Total urea, 38 grs. Relation of uric acid to urea, 1-25.

August 13.—Headache better; keeps on diet. Still has fits, and takes bromide for them.

No. 14.—Eliza D., æt. 37, September 24, 1887. Suffers from “bilious headache” every two weeks. Has had it for years, and worse the last two or three years, and after twins born prematurely. Had seven children and one miscarriage as well as the above twins. Only two children are alive now.

Her mother suffered from headache; she died of post-partum hæmorrhage. Her father "had gout in his leg." One sister has headache. She eats meat, about  $\frac{1}{2}$  lb. a day, but can't eat cheese or butter.

*Present condition.*—Tongue, slight fur and red. Bowels not open regularly. Takes food badly. Catamenia regular, scanty. Pulse 84. Tension slightly plus.

The headache comes on when getting up in the morning, but is worst in the afternoon. It lasts one day, or perhaps two. One week it is in one temple, and next week in the other.

Put on acid mixture for the headache, and conf. sennæ for the bowels.

October 1.—Says she has not had a headache to try the acid mixture on, but she has taken a few doses of it, and feels generally better.

Such are my cases, and I am sorry that they are not more numerous and my notes more complete. The history of my own case is much more complete, and any one who will read what is said about it in my papers in the *Practitioner*, and that on headache and uric acid in the *Medico-Chirurgical Transactions*, will see, I think, that it agrees in the main with most of those above related; but in my case the influence of diet is much more marked because continued for a much longer time than in these cases, and the urinary reaction is more decisive because it was collected and separated with more precision than could well be expected in the case of an out-patient.

Of the sex and age of these patients I have already spoken, and I think the preponderance of females, if more than an accident, may be put down to two causes—(1.) That their sedentary and indoor habits and work render their nervous system more sensitive than that of males; and (2.) that the functional disturbances of menstruation may so react on nutrition in general, and the nervous system in particular, as to still further predispose it to react to slight causes of irritation. In this connection it is interesting to remember that strychnine is very useful in this headache, and I conclude the explanation is to be found in its tonic action on the vasomotor centre; for it is supposed by some, in accordance with a theory due, I believe, originally to Professor du Bois Raymond,<sup>1</sup> that this headache is due to irritation of the vasomotor nerves of the cervical sympathetic region, which causes contraction of the vessels in certain areas, and this being followed by dilatation and congestion, produces the pain; and Dr. Brunton<sup>2</sup> has suggested, in connection with

<sup>1</sup> Living on Headache, p. 296.

<sup>2</sup> Hospital Reports, vol. xix. p. 333-334.

this theory, that the proximal ends of the vessels are dilated while the distal ends are contracted, and that the pain is due to the shock and pressure of blood against the contracted extremity.

But to return. Given this sensitive nervous (vasomotor) system, it is supposed that some poison circulating in the blood (viz., as I have suggested in previous papers, uric acid) irritates it and gives rise to the vasomotor phenomena and the resulting headache.

It is not supposed that the fluctuations in uric acid excretion are confined to sufferers from this form of headache; on the contrary, my researches seem to show that they occur in every one daily to some extent, and in those of gouty disposition to a considerably larger extent; but all gouty people do not suffer from headache, because all of them have not the above specially sensitive nervous system.

So that we must have several factors:—

1. A sensitive nervous (vasomotor) system.
2. That system must be specially weak or sensitive in some part of the cranial circulation.
3. An irritant poison in the blood, as uric acid.

For the mechanism and process by which the uric acid comes to be in excess in the blood (I believe the only way in which it ever is in excess in that fluid), I must refer to my previous papers, especially the one in the *Journal of Physiology*.

All my cases have suffered from this headache for many years or for life; the only exception is Case 9; but I think that further inquiry would have shown that it was not really an exception, as in several cases I was told that the headache had been present for two or three years, but later on it came out that it had really been present for many years or for life, but had been worse the last two or three years.

Two cases, 11 and 12, are mentioned as having epilepsy as well as headache, but I shall have something to say on this matter later on.

The headaches seem to recur in all cases from once a week to once in four weeks.

Family history of headache is, I am afraid, very imperfect. "No note" means that I do not know whether it was inquired into. "No history" means that it was inquired for, but there was nothing known worth record. Still in four cases other members of the family are known to have suffered.

And the same applies to family history of gout; and I think that a more regular and careful inquiry would have elicited a closer connection with this disease; and my experience of cases



in private life, where histories are better known, confirms this supposition.

Phthisis is the only other disease mentioned, and gout and phthisis are not uncommonly found in the same family history.<sup>1</sup>

All cases in which diet was tried seem to have shown some improvement; in two it is said to be slight or temporary, and in one great.

With regard to those noted as improved, I have very little doubt, from the experience gained in my own case, that if they could have been kept on the diet and under observation for many months or some years, the improvement would have been found to be progressive, and Case 11 is particularly instructive in this respect.

The butcher-boy, Case No. 4, is remarkable in that he was quite clear that though he had had this headache all his life, it had never been so bad as while he was eating extra meat as a butcher-boy, and this increased severity of the headaches brought him to the Hospital. If they had not been made worse by this change of diet, he would have gone on bearing them without doing anything, and I should never have seen him. He did not obtain full relief from diet treatment, probably because he did not, or could not, carry it out completely.

With regard to some general symptoms, though this headache is often called "bilious," symptoms pointing to gastro-intestinal derangement are generally notable by their absence. The tongue is clean or very slightly furred, the pulse is slow, and temperature normal; the bowels open regularly, and food is well taken, even during the headache, except just at its worst point, when it causes prostration, and perhaps vomiting—symptoms which are in strong contrast with the frontal headache, furred tongue, quick pulse, febrile movement, and disgust at food of real gastro-intestinal derangement.

With regard to the myopia of Case 9, he works in the office every day, but only has a headache once a week. If the headache were due to the myopia, it would be probably too nearly continuous to be confused with the kind of headache of which I am speaking.

Flashes and zigzags of light are common in megrim.

It is interesting to note that he found cheese bad for him.

In Case 11, it may be noted that iron made him worse, and it is interesting to remember in this connection that Sir A. Garrod<sup>2</sup> has shown that urate of iron is insoluble.

This patient found salicylate of soda useful, as I had done

<sup>1</sup> See Dr. Laycock, *Medical Times and Gazette*, vol. i. 1862, p. 499.

<sup>2</sup> *British Medical Journal*, vol. i. 1883, p. 495.

myself; he did not lose weight on the diet, and improved very considerably in respect of the headaches; but of this I have already spoken. His pulse-tension is noted as being slightly plus, and I have noticed this in one or two cases, but not by any means in all; and in none I have seen it so markedly plus as in my own case; but this point requires further investigation, as possibly my case is one of those mentioned by Dr. Broadbent<sup>1</sup> in which this condition is inherited, and has nothing directly to do with the headache in question. I think also that my pulse-tension is higher during attacks of headache than at other times; but there may be many reasons for this.

In No. 12 the uric acid reaction is similar to that obtained in my own case (see *Medico-Chirurgical Trans.*), *i.e.*, the uric acid bears a larger proportion to the urea on the day of headache than on the day when headache is absent; and it will be noticed that the same hours on two days have been purposely chosen. I do not think for a moment that all sources of error have been here eliminated, but as she improved on the diet treatment, the urinary reaction is probably not a mere coincidence; but the difficulty of obtaining urine of any given period properly collected and separated from that of other periods in the case of out-patients is very great, and this is the only instance among those cases in which I have obtained specimens with sufficient precision to be worth analysis; but I have no doubt that this uric acid relation will be found in all cases of headache that correspond with the definition I have given, and improve under diet treatment.

Case 14 has had headache for years, but there is evidently some debility and also slight gastro-intestinal derangement present here. Her headache comes on when getting up in the morning, and this is rather too early in the day, though in some cases it is slight then. The time it generally comes on decidedly is, as I have said in other papers, during the "alkaline tide," from two to three hours after breakfast. It also seems to last rather long in her, but this is subject to considerable variations, though I should at once eliminate from my cases anything like a continuous headache; for if it is due to uric acid in the blood, and if that uric acid gets into the blood in the way that I have suggested, it is not possible for the headache to be continuous for more than thirty-six to forty-eight hours. Her pulse-tension is slightly plus. The best cases are those in which the headache attacks have been present as far back as can be remembered. I can well recollect having some when I was eight years old.

There is one other test which, when some of the above clini-

<sup>1</sup> Croonian Lectures, *Lancet*, vol. i, 1887.

cal signs are doubtful, may be of use, and that is the sulphocyanide saliva test of Dr. S. Fenwick, who says<sup>1</sup> that the sulphocyanide is in excess in cases of "bilious headache" met with in patients who often belong to rheumatic or gouty families; and so far as I have been able to test the point, this seems to be true; and, if true, it forms another interesting link between this headache and gout. Dr. Fenwick also says that in headaches due to debility or neuralgia the sulphocyanide is minus.

Two cases, Nos. 11 and 12 in the table, suffered from epilepsy as well as headache, and both at one time or another had taken bromide of potassium for it; and in No. 11 it rather appears as if the diet had improved both the fits and the headache. Iron made his headaches worse, and iron is said to be harmful in epilepsy (Brown-Séquard, Quain's Dict. of Med., p. 450). The use of bromide in epilepsy is common; it is also useful to some extent in this headache, though it cannot compare with the treatment by acids I now make use of. It may be noted also that epilepsy is a disease which resembles this form of headache in many points, in the age of the people it attacks, in that it begins early in life and lasts for years, or the rest of life, and in that its attacks come at more or less regular intervals; and though patients often have many attacks in a day, this may be looked upon as corresponding to a severe and protracted headache, which, however, reaches to intense agony only occasionally. Further, we have seen that this headache is supposed to be due to vasomotor trouble in the region of the cervical sympathetic, and an almost identical explanation has been put forward in the case of epilepsy. What if this headache and some cases of epilepsy should differ only in the vasomotor region affected? and what if the vasomotor trouble should in both be due to the same irritant in the blood, viz., uric acid?

Dr. Liveing<sup>2</sup> has written a good deal about the affinities of epilepsy with megrim, regarding them both as neuroses, which is much the same view that I take; only I think that at least one of these neuroses would never occur if uric acid could be kept out of the blood; and from this point of view some of Dr. Liveing's remarks and quotations are of great importance. Thus (p. 205) he says: "To begin with epilepsy. This is doubtless the particular neurosis which exhibits the closest connection with megrim, both in the occasional replacement of the one affection by the other, and also in the occurrence of cases of a character intermediate between the two." He then quotes a case in which sick-headaches began at 12 years of age, and were

<sup>1</sup> *Lancet*, vol. i. 1887, p. 1271.

<sup>2</sup> On Megrim and Sick-Headache. Churchill, 1873.



worst at the menstrual periods, and at 23 years of age were replaced by epileptic seizures, which had exactly the same relation to the menstrual periods. Further, he quotes from Dr. Perry's "Elements of Pathology" as follows:—"This kind of headache, usually called sick-headache, so well described by Dr. Fothergill, not uncommonly occurs as a vicarious affection with epilepsy. I have known epilepsy occur indiscriminately with sick-headache, disappear as that was cured, and return again several years afterwards, as, from the imprudence of the patient, the sick-headache also returned." Here there is a case very similar to one I have narrated, epilepsy occurring indiscriminately with headache, and appearing to improve along with it. Dr. Liveing also quotes from Dr. Marshall Hall a case where "*during* an attack of vomiting and headache she was seized with a mixed character of fit (apoplectic epilepsy)," and this was followed by at least twenty-eight similar attacks. Here epilepsy came on for the first time during an attack of sick-headache. Again (p. 295 *et seq.*), Dr. Liveing quotes from Dr. du Bois Raymond, who, after speaking of his hypothesis that migraine is due to a tetanus in the muscular walls of the vessel of the affected part of the head, goes on to say (p. 300): "Singularly enough, if Kussmaul and Tenner's doctrine is right, which places the origin of many epileptic seizures in a spasmodic constriction of all the arteries of the head, then my migraine would be distinguished from this kind of epilepsy less by the nature of the disturbance which prevails in it than by its degree and extent."

It seems to me that very little more is wanted, for if this headache is due to a spasm in certain vasomotor regions, and some cases of epilepsy are due to spasm in certain other neighbouring regions, and if, as further appears likely from my work, the spasm in the case of the headache is due to the irritation of uric acid in the blood, it is but a small step to suppose that the epileptic spasm may be due to the same cause.

It may also be remembered that a farinaceous diet has been often found useful in epilepsy. Thus, in Jackson's "Letters to a Young Physician," p. 66-67, it is said: "A certain proportion of cases are susceptible of relief, and even of cure, from a vegetable diet, no flesh or fish; milk and butter, and very occasionally an egg, being allowed." I cannot believe that the close parallel noticed by so many observers between these two diseases has no meaning; and the remarkably similar way in which they react to diet and drugs encourages me to hope that some cases of epilepsy will be found to yield urinary reactions similar to those I have obtained in the case of this headache, and that such cases of epilepsy will, like this headache, be relieved by acids and cured by diet.





## CASES FROM MR. SAVORY'S WARDS.

BY

CHARLES A. PARKER.

### CASE I.—*Ulceration of the Colon.*

Sarah A., æt. 18, a servant, was admitted into Lucas Ward, on January 8, 1886, suffering from an abscess on the right side of the thoracic wall. She was somewhat wasted, looked very ill, and had a hectic flush.

*History.*—On September 16, 1885, patient was taken suddenly ill with acute pain in her abdomen. She was treated at home by rest in bed and poultices to the abdomen, but got no better; so within ten days of the onset of her illness came to this Hospital, and was admitted into Elizabeth Ward. Here she was pronounced to have perityphlitis, was treated for it, and in six weeks' time left the Hospital "cured"; but patient stated that she had never felt really well since. About December 24, 1885, she noticed a swelling on the right side of her chest; it was red, tender, and very painful in the efforts of respiration. It gradually increased in size until the time of her readmission to this Hospital. Patient stated that she had recently had occasional severe fits of coughing, accompanied by a large amount of expectoration.

*Previous illnesses.*—Measles and whooping-cough in infancy.

*Family history.*—Father died of phthisis in this Hospital in about 1874. Mother and rest of family alive and healthy.

*Condition on admission.*—A large abscess extended over right ribs from the liver right up into axilla. Hot, red, acutely tender and painful, marked fluctuation. Temperature 101.2°. Pulse 100, feeble. Appetite very poor. Bowels regular. Urine natural. Heart normal. Lungs natural.

*Treatment and progress.*—On January 12th abscess was aspirated; only  $\frac{1}{2}$  oz. of pus escaped. On the 13th a free incision was

made into it, and the cavity well washed out. Very little pus came away. Poultices applied. This incision was followed by a fall of temperature at first, and by some improvement of her general condition; but shortly afterwards the patient began to grow gradually weaker. A very troublesome cough, with free expectoration, came on, also occasional night-sweats; the temperature assumed a hectic character; and towards the middle of February the physical signs were thought to indicate subacute phthisis, though it was a much-disputed point. There was a continuous discharge of pus, in varying but small quantities, from the sinus remaining in the side. Bowels perfectly regular.

The patient continued in much the same condition from week to week during the months of March and April, except that she became gradually though very slowly weaker. The exact diagnosis of the condition of the lungs remained doubtful, but phthisis was thought to be most probable.

Towards the end of May she began to get worse more rapidly, and died on the 2d of June 1886.

The following conditions were found at the post-mortem examination:—

*Head.*—Normal.

*Thorax.*—Pericardium distended with about a pint of clear limpid fluid. No pericarditis. Pleuræ adherent, and containing fibrinous dirty fluid. Lungs: General broncho-pneumonia, with suppuration and formation of small abscesses throughout. The left lung was in the worse condition.

*Abdomen.*—No peritonitis. Ascending colon closely adherent to the liver at the hepatic flexure, and bounding in part a cavity containing pus. This suppuration extended into the right lobe of the liver, which was soft and breaking down, and communicated by a narrow tract with an aperture in the right side in the posterior axillary line between the ninth and tenth ribs. There was no retained pus in any quantity. The tenth rib was necrosed around the sinus.

On opening the ascending colon, a small ulcer, the size of a split pea, evidently of old formation, was found to have penetrated its walls and opened into the area of suppuration. The ulcer was circular, with smooth rounded edges, and showed no evidence of any new growth. There was nothing to show how the ulcer originated, for the rest of the gut was healthy.

*Spleen.*—Amyloid.

*Kidneys.*—Fatty, slightly amyloid.

*Pelvic organs.*—Healthy.

CASE II.—*Ulceration of Colon and Cæcum.*

Emma H., æt. 49, a married woman, who had had eight children, five of whom died in their infancy, was admitted into Stanley Ward, on August 16, 1887, having been thrown out of a pony-cart.

*History.*—With the exception of some menstrual disturbance, the patient stated that she had been quite well up to the time of the accident, which took place on August 14th, *i.e.*, two days before admission. She was thrown out of a pony-cart and rendered unconscious for several minutes. She was driven home, feeling very faint and ill, and went straight to bed. She said that the next day she suffered great pain in her abdomen, and was constantly sick. She was advised by her doctor to come to the Hospital.

*Previous history.*—The patient stated that she remembered having had no severe illness, and that she had always been a fairly strong woman. Her confinements, she said, had always been very difficult.

On admission, there was a good deal of bruising about the right side of her face and the outer side of right thigh.

The abdomen was somewhat full. Good resonance all over, except at lower part of both lumbar regions, where it was dull to percussion. Nothing could be made out by palpation; no tumour or increased resistance at any part. There was some slight tenderness all over her abdomen, and she complained of a good deal of general abdominal pain. There were no signs of a hernia to be found anywhere.

Patient looked anxious and seemed seriously ill.

Pulse 90, feeble. Temperature 99.2°. Bowels had not been open since the 14th. Urine acid; sp. gr. 1028. A good deal of albumen; no sugar.

*Treatment.*—Occasional and small doses of Tr. opii. Milk-diet. No solids. Poultices to abdomen.

For the first few days after admission the patient had very little sleep at night, and was constantly sick, the vomit being a green watery fluid. The abdomen became a little more distended and tender, and she complained of pain of a griping character. Bowels were not opened until the 20th, when she passed three copious motions, very loose and offensive, and of a dark brown colour. There was some reason for suspecting that the patient's friends had brought her in a pill. Her temperature kept about 99°. On the 22d the vomiting ceased, and there was some improvement in the patient's condition, except that the diarrhoea



continued, for which starch and opium enemata were given. Abdominal pain and tenderness not so severe. Temperature slightly elevated,  $99.8^{\circ}$ . There was now no albumen in her urine.

There were no alterations in the symptoms, and nothing worth recording until August 28th, when, following the course of the ascending colon, and half-way across the transverse colon, there was noticed to be an ill-defined swelling, giving a sense of resistance on pressure. It was dull to percussion and slightly tender. The patient seemed weaker, but otherwise her general condition was unaltered. Temperature normal. On August 30th the temperature had risen to  $101.2^{\circ}$ , and the patient had a little more pain in the abdomen and still some diarrhoea. There could now be felt a distinct tumour about the hepatic flexure of the colon, hard, dull to percussion, but not very tender. She was kept on liquid diet, of which she took fairly well. During the next three weeks the patient got gradually weaker. Local condition remained just the same. Temperature was very irregular, but on the whole elevated. Bowels irregular; open about every other day; motions always copious, loose, dark-coloured, and offensive.

About September 17th she began to get worse more rapidly, and became very weak. She was also troubled with a cough, which on September 20th was very troublesome, and accompanied by pneumonic expectoration. There was impaired resonance of both bases with fine crepitations. Temperature higher, more diarrhoea, loss of appetite, great prostration. There was also noticed for first time an aphthous condition of mouth and tongue.

With slight temporary improvements the patient got slowly weaker and weaker, until, on October 20th, she died. The condition of her abdomen remained just the same to the last. There was more diarrhoea during the last month; the character of the motions were unaltered.

The following is the description of the post-mortem examination:—

*Thorax.*—Heart and pericardium natural. Pleuræ normal. Right lung, solid at the base, and in parts breaking down into pus. Left lung, general broncho-pneumonia, and pus in the tubes.

*Abdomen.*—General chronic peritonitis, the intestines being adherent throughout. Around the cæcum and ascending colon was a collection of fæcal matter and pus, which extended up in front of the liver to the diaphragm. The pus and fæces were limited by adhesions. At the bottom of the cæcum, opposite to its peritoneal attachment, was a circular ulcer, with smooth rounded edges, which had perforated the intestine, and showed

no evidence of any new growth. It was as large as a threepenny-piece. In the ascending colon, on its anterior wall, three inches from the cæcum, was a second similar ulcer, twice as big as that in the cæcum. There was no evidence of typhoid fever, dysentery, or tubercle. The intestines were very soft and rotten.

The right kidney was congenitally atrophied; as large as the gland of an infant; the left half as large again as natural.

Other abdominal viscera normal.

*CASE III.—Concussion of the Brain, followed by Double Optic Neuritis and Paralysis of Right External Rectus.*

Harry H., æt. 23, cabinetmaker, was admitted into Kenton Ward on March 10, 1887, suffering from concussion of the brain.

It was stated that the patient had fallen from a ladder, and that he was picked up quite unconscious, and brought to the Hospital. The patient himself remembered being in Camden Town, where the accident occurred, but had no recollection of anything else until he found himself in bed in the Hospital on the 12th of March.

On admission, the patient was in a semi-unconscious, drowsy condition. He could be roused and made to answer questions, but he remembered nothing. All the ordinary signs of concussion of the brain were present. There was also a bruise on left temple.

The patient remained in this heavy semi-unconscious condition until the 12th, when he gradually showed signs of returning consciousness, and by the 17th most symptoms had disappeared; but he complained of pain at the back of his head and some indistinctness of his eyesight. This indistinctness of vision became worse, and on the 25th ptosis of right eye was noticed, and shortly afterwards he was found to have paralysis of the right external rectus with homonymous diplopia. On the 30th of March his eyes were examined ophthalmoscopically, and he was found to have double optic neuritis. The discs were swollen and red, with indistinct edges. The blood-vessels within the discs were small, while those outside it were large, swollen, and tortuous.

The patient's general condition improved rapidly, but his eyes remained the same.

On April 17th, being in very good general health, the patient left the Hospital, though, on examination, his eyes were found to be in very much the same condition.

The patient was again seen on November 7, 1887, and a careful

ophthalmoscopic examination was made. No signs whatever of optic neuritis were discovered. There was no ptosis or squint. He was in excellent general health.

*CASE IV.—Removal of a Thyroid Cyst, followed by Ulceration opening into the Trachea.*

Edward B., æt. 41, was admitted into Abernethy Ward on October 4, 1886, with a cyst of the thyroid gland. He was a fairly strong, healthy man.

*History.*—Patient stated that he had noticed the swelling in his neck for three or four years, but that it was not treated until two and a half years ago, when he applied for relief at Guy's Hospital. There the swelling was thought to be a cyst. It was tapped, and fluid drawn off. The tapping did not cause it to disappear entirely. It remained greatly reduced in size until six months ago, when it again began to enlarge. Previous history and family history unimportant.

*Condition on admission.*—On the right side of patient's neck there was a soft fluctuating swelling, the size of a tangerine orange, circumscribed, moving with the larynx on deglutition, and evidently connected with the right lobe of the thyroid, which was also slightly enlarged and continuous with the swelling. General condition good. Heart and lungs natural. Urine acid; sp. gr. 1016; no albumen; no sugar.

*Treatment and progress.*—On October 6th cyst tapped. Blood-stained fluid drawn off. Cyst collapsed. Pressure applied. This treatment, however, was not successful, the cyst rapidly refilling.

On October 16th, the tumour having nearly reached the size it was on admission, it was determined to attempt its removal. The patient was therefore put under the influence of chloroform, and a longitudinal incision being made over the tumour, its anterior and lateral aspects were easily cleared, but the posterior wall was found closely adherent to the great vessels of the neck, so that Mr. Savory deemed it inadvisable to attempt to dissect it off. He therefore opened the cyst, from which blood-stained fluid escaped, and at the bottom of which the carotid artery could be felt and seen pulsating. He cut away the greater portion of the cyst, leaving as much of the posterior wall as was adherent to the vessels. A plug of dry lint was placed in the cavity, and the wound stitched up except at its lowest part, and dressed with carbolic oil lint.

This operation was followed immediately by a considerable rise of temperature, 102°, but by no other bad symptom. On the 18th the plug of lint was removed from the wound, and two stitches were taken out. His temperature remained about 102°

until the 21st, when it began to fall, and became normal on the 24th. The wound meanwhile had nearly healed, except just at its lowest part. The patient went on most satisfactorily until November 2nd, when his temperature began to rise again, and loss of appetite, sleeplessness, furred tongue, pain in the wound and right side of neck, and slight difficulty of swallowing ensued. On the 4th of November these symptoms had increased in severity, and there was also a good deal of heat, redness, and swelling about the wound, and extending across the middle line to the left side of the neck. The wound was slightly enlarged, and examined with a probe, but no collection of pus could be found. Poultices were applied, into which a little blood-stained pus escaped.

On November 6th the temperature was  $102.8^{\circ}$ , and a cough, with pneumonic expectoration, made its appearance. On examination, impairment of resonance at both bases, with fine crepitations, was found. The swelling of the neck and difficulty of deglutition having much increased, the patient was anæsthetised, and the wound freely reopened. No collection of pus was discovered. A long incision in the middle line was also made to relieve tension.

After this the temperature fell to  $101.4^{\circ}$ , and the swelling of the neck became less, but the patient did not gain ground. The cough continued troublesome, and a trace of albumen appeared in the urine.

By November 11th the swelling and inflammation of the neck had almost entirely subsided, and the wounds looked perfectly healthy. The temperature, however, had risen again to  $102.6^{\circ}$ , and the patient's general condition was decidedly worse. He was very weak and prostrate. His cough got more troublesome, and was accompanied by an abundant and offensive expectoration. Pulse weak, 112. He took nourishment very well.

On November 16th it was noticed, on syringing out the original wound, that the patient at once had a severe fit of coughing, which caused a frothy discharge to come from the wound of precisely similar characters to the expectoration; also, on listening, air could be heard going in and out of the wound. This fit of coughing occurred whenever the wound was syringed out.

The patient was a great deal weaker in spite of taking abundance of nourishment.

On the 17th November, in the afternoon, the patient had a severe rigour, and his temperature went up to  $104.8^{\circ}$ . It left him much exhausted.

After this he gradually sank, and died November 19, 1886.

The following are the results of the post-mortem examination:—



*Neck.*—No retained pus; no cellulitis. There was a little cavity on the right side of the neck, in connection externally with the operation-wound. It also had an opening internally in the middle line of the neck into the trachea. This opening was only as big as a pin's head, and situated between the second and third rings of the trachea. The whole trachea was much softened.

*Thorax.*—No pleurisy. Heart and pericardium natural. General diffuse broncho-pneumonia of both lungs, with pus in the tubes and a gangrenous condition of a small portion of the right base.

The abdominal viscera were all healthy.

It seemed clear that the fatal result was due to the effect of the communication accidentally established between the cavity in the neck and the trachea.

#### CASE V.—*Osteitis of the Femur following Typhoid Fever—Amputation.*

H. B., a man, æt. 25, a coachmaker, was admitted into Abernethy Ward on January 13, 1887, suffering from osteitis of the right femur. He was somewhat wasted, but of fairly healthy appearance.

*History.*—Patient stated that he sickened with typhoid fever in October 1885, for which he was admitted into the Adelaide Hospital, Dublin, and after remaining there fourteen weeks, he was sent at the beginning of January 1886 to a convalescent home for three weeks. During the end of his stay there he experienced sharp shooting pains at the inner side of the thigh, just above the knee, of an intermittent character, and aggravated by exercise. These pains were followed towards the end of February 1886 by a painful swelling in the popliteal space, which was poulticed and burst, and a considerable quantity of pus escaped. The resulting wound healed up in about six weeks. The patient went on satisfactorily for some time; but in April the old pain began to return, and in May 1886 it became much worse, and the lower part of the thigh became much swollen, hard, and red. Another abscess formed and burst. Since May 1886 he has had a succession of abscesses at intervals of one or two months; as each one healed another formed. Pain in lower part of thigh has continued. He has been confined to bed nearly all the time.

There was no history of struma, rheumatism, or syphilis. Patient has been a temperate man most of his life.

*Condition on admission.*—Right thigh was much swollen on the anterior and lateral aspects in the lower two-thirds of its

extent, measuring  $2\frac{3}{4}$  inches more in circumference at its thickest part than the left thigh. Heat and redness were also present. On its posterior aspect, in its middle third, were two sinuses, both discharging a little. On examination with a probe, no exposed bone could be felt.

The patient was suffering no pain, and the thigh was not tender. He could walk fairly well, and was enjoying moderate health.

Urine acid; sp. gr. 1030. Large deposit of urates. No albumen; no sugar.

Temperature subnormal. Bowels regular. Appetite fair.

Heart and lungs natural.

*Treatment and progress.*—On January 18th fluctuation could be detected in the middle third of the anterior aspect of the thigh, and it was evident that there was another abscess. This was freely opened on the 21st, and poultices were applied.

On January 20th the patient was taken into the theatre for consultation. It was agreed that it was a case of osteitis and periostitis following typhoid fever, and that there were three courses open: (1) To wait; (2) to remove the necrosed bone, which would be a most formidable, if not impossible, operation; (3) to amputate above the disease. Considering, however, that the patient suffered but little pain, could walk fairly well, and was in moderately good health, it was thought best to wait.

The opening of the abscess on January 21st was followed by a great deal of discharge, and by a marked diminution in the swelling of the thigh; and all went on satisfactorily until February 31st, when patient's temperature rose to  $102.4^{\circ}$ , and he experienced great pain in the limb. There was no evidence of a fresh collection of pus, but the whole thigh seemed somewhat larger. During the next six days the temperature remained elevated, and the patient suffered great pain of a gnawing character, much worse at night. Pulse was rapid and soft; tongue furred; profuse night-sweats. There was a great deal of discharge from the sinuses in the thigh, but from some of them it did not escape very freely.

On February 6th the patient began to improve again. His temperature fell, appetite improved, the pain decreased, the discharge lessened, and the swelling of the thigh diminished.

The patient remained better until February 11th, when he again experienced more pain, very marked at night, and his temperature began to rise once more, until, on February 13th, it reached  $103^{\circ}$ . His general and local condition got gradually worse, his appetite became poor, tongue furred, bowels irregular. On February 21st there were signs of a fresh abscess on the inner side of the thigh, just above the knee; so on the 22d an anæsthetic

having been administered, a free incision was made into it. The old sinuses were also opened up to allow of thorough drainage. These incisions were followed at first by slight improvement, general and local, but his temperature remained elevated, and he continued to suffer much pain.

For the next month the patient varied very much, being some days better and some days worse, but week by week a gradual and slow decline in patient's strength was noticed, until, on April 7th, a consultation was held to consider the question of amputation. It was thought that the patient's condition was as bad as could be for a severe operation, and that on the whole it would be better to wait on the chance of his again improving.

On April 13th there were signs of another abscess on the upper part of the anterior surface of the thigh, and on the 14th it was freely opened. This was at once followed by a fall of temperature to normal, and the patient's general condition began to improve rapidly, and in the course of the next week the thigh had quite quieted down, leaving great enlargement of middle third, evidently due to an increase in thickness of the bone.

The patient continued to improve markedly, and on May 21st, as both local and general conditions were highly satisfactory, and as it was thought that directly the patient tried to walk inflammation would be again set up, the limb was amputated in the upper third. The operation was complicated by a great deal of hæmorrhage, which pressure on the femoral did not control. The arteries at the posterior part of the limb were very numerous and large. On sawing through the bone, it was noticed to be excessively hard.

The patient made a rapid recovery, without a single bad symptom, the stump healing up by first intention in nearly the whole of its extent. He left the Hospital for Swanley on June 17, 1887, in excellent health.

The patient was seen in October. He was very well, and had a very good stump.

On examination of the limb after removal, the soft parts were found to be infiltrated with inflammatory products. The periosteum was very much thickened and adherent to the bone. The whole of the middle two-fourths of the femur was greatly thickened and excessively hard, and covered with large stalactitic growths of bone. The medullary canal was natural. Buried in the thickest part of the anterior portion of the bone there was a sequestrum about an inch and a half long, half an inch broad, and a quarter of an inch thick, walled in on every side by dense hard new bone, and only communicating with the surface by two small cloacæ.

CASE VI.—*Diffuse Idiopathic Osteomyelitis of Right Femur involving the Knee-Joint.*

Sydney J., æt. 44, a bill-poster, was admitted into Abernethy Ward on April 18, 1887, suffering from diffuse periostitis of the right femur. He was very emaciated and looked very ill.

*History.*—The patient stated that he was quite well until the last week in February (1887), when he noticed stiffness of the hamstring muscles of the right leg and difficulty in getting the right heel to the ground. This condition continued for five or six days, and then the knee and lower part of the thigh began to swell and become acutely painful. The pain was of a gnawing character, and especially severe at night. About the 10th of March he was compelled to take to his bed, but the rest did not cause any improvement; he therefore went to the Newington Infirmary about March 15th, the pain and swelling being just the same as when first noticed. For the first fortnight after his admission into the Infirmary the thigh was poulticed; the pain and swelling increased, and an abscess formed, which was opened in the last week of March by a free incision. A large quantity of pus escaped. This was followed by great relief to the patient and improvement in the general condition. The Infirmary authorities advised amputation, but he preferred to come to the Hospital for the operation if necessary.

The patient denied all history of a blow or injury of any kind.

*Previous history.*—Rheumatic fever when fifteen years old, on account of which he was confined to bed for three months. His right ankle had remained stiff ever since. Doubtful history of syphilis when twenty-four years old. Great exposure to wet and cold for eighteen months previous to his present illness.

Family history unimportant.

On admission, the patient was pale, sallow, much wasted, and in an exhausted condition. Pulse 112, weak, and of poor volume. Temperature 102.6°. Urine acid; no albumen, no sugar; sp. gr. 1016. Tongue large and flabby. Bowels opened. Chest barrel-shaped. Lungs emphysematous. Heart and liver dulness greatly diminished. No cardiac murmurs.

In the lower third of the thigh, over the inner border of the rectus, there was an incision wound, three inches in length, discharging pus freely. On introducing a probe, it could be passed freely in all directions, especially upwards, and on guiding it backwards, exposed bone could be felt at the back part of the femur in the popliteal space. All the muscles were greatly undermined and regularly floating upon pus, which was making its way



to the surface in Scarpa's triangle. On the inner side of the knee was another small opening, which did not communicate with the upper one, and did not pass deeply towards the joint. The skin all round was much undermined. There was also a third wound in the popliteal space, but it too was quite superficial. The patient was quite unable to bend his knee, and any attempt, active or passive, to do so, caused him acute pain. There was no fluid detected in the joint.

*Treatment and progress.*—On April 20th a free incision was made at the apex of Scarpa's triangle, and about half a pint of horribly offensive pus escaped. Poultices applied. By means of this opening a better drainage was established, but still it was not perfectly free. After this there was some slight improvement in the general condition, but it was only temporary. He grew very rapidly weaker. The evening temperature was elevated, the morning normal. On May 9th another incision was made on the inner aspect of the upper third of the thigh, which gave a much freer escape to the pus.

The discharge continued to be very copious, of a greenish colour, and horribly offensive odour. His temperature became more elevated and very irregular. He grew gradually weaker, and died exhausted on May the 14th.

Amputation was several times thought of, but the patient's condition never admitted of it.

The following was the result of the post-mortem examination :—

*Head.*—Brain and meninges natural.

*Thorax.*—Bases of lungs congested and collapsed. A little muco-pus in bronchi. No pneumonia. Heart and pericardium natural.

*Abdomen.*—Liver fatty. Other viscera natural.

*Right lower extremity.*—There were numerous sinuses in thigh and popliteal space. The muscles were infiltrated with pus as high as the great trochanter. The periosteum was stripped off the femur in the popliteal space and destroyed, and in several parts of the thigh it was shreddy and sloughy.

On section of the femur, there was found to be general osteitis and osteomyelitis, extending as high as the trochanters. The bone was infiltrated with pus, and in many parts necrosed. The knee-joint contained a small quantity of pus. The cartilages were ulcerated and the ends of the bones carious.

THREE CASES  
OF  
MULTIPLE POLYPI OF THE LOWER BOWEL  
OCCURRING IN ONE FAMILY,  
WITH REMARKS  
BY  
THOMAS SMITH.

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CASE I.

Alfred C., æt. 20, was admitted into Henry Ward on November 8, 1881. Ten years ago he was taken to the London Hospital for hæmorrhage from the bowel, and was operated on by Mr. Adams. For three or four months he remained well. After this time the bleeding returned, and recurred at intervals during four years. Five years since he was again operated on by the late Mr. Maunder, with temporary relief. Two years ago Mr. Adams, of the London Hospital, operated on three separate occasions, and after this he left the Hospital of his own accord, the bleeding being liable to recur at intervals.

His appearance on admission was that of extreme anæmia. He complained of pain in the rectum, especially on defæcation. He had almost constant discharge of bloody mucus from the bowel, and frequent attacks of hæmorrhage. He could protrude from the anus at will a polypoid mass the size of a plover's egg.

November 24.—The rectum was dilated, and for a distance of five inches, *i.e.*, as far as one could see, was found full of pedunculated polypi, varying in size from a pea to a large cherry, very

vascular, and mostly attached by long, slender stalks. The largest and most vascular of these were removed after ligaturing their pedicles.

No further hæmorrhage occurred, and he left in a month's time, free from his former symptoms.

September 1883.—He again came under my care with the same symptoms, and again the larger and more accessible growths were removed.

March 1885.—He returned suffering from severe hæmorrhage, and a number of polypi were removed. Before his discharge on April 13th, he complained of some pain in the left lumbar region, and a circumscribed area of dulness was detected in this part, where also there was deep tenderness on pressure.

January 1887.—Was admitted suffering great pain and frequent loss of blood. Several large growths were removed, and he left the Hospital free from his symptoms to resume his work as a waiter.

March 15, 1887.—He was brought in a moribund condition. His friends stated that since his last discharge from the Hospital he had suffered dull aching pain in the abdomen; that two days since he was seized with violent cramping pain in the lower abdomen, and sickness. He had taken no food for two days. He had had constant hiccough. On examination, he was found to be moribund, with the signs of peritonitis, and he died next day.

On post-mortem examination, he was found to be suffering from adenoid cancer of the lower part of the sigmoid flexure, and there was at this point an almost impervious stricture of the bowel. The rectum below this contained a large number of polypoid growths, similar to those that had been removed during the patient's lifetime. Above the seat of the cancer there were but few to be found, and in the ascending and transverse colon not more than three or four, and these were small and rudimentary.

The larger number of the polypi were more or less globose, having slender stalks, but here and there were ribbon-like, ragged, slender, branched outgrowths, and some few of the smaller growths were sessile. On microscopic examination, the polypi proved to be well-marked examples of the adenoid variety, such as have been so well described by Mr. Cripps.

There was a considerable deposit of adenoid cancer just at the junction of the sigmoid flexure with the rectum, surrounding the bowel and almost obliterating its canal. The rectum, where it passed over the concavity of the sacrum, was adherent to the neighbouring parietal peritoneum.

The large intestine above the stricture was enormously distended by fæces. The peritoneum over the anterior longitudinal mus-

cular band of the cæcum had been split by the excessive stretching. There was no peritoneal effusion or peritonitis. The other organs were normal.

## CASE II.

Ernest C., æt. 17, a barman, a younger brother of the patient whose case is given above, came under my care in Rayhere Ward, June 27, 1887. As long as he can remember his bowel has been liable to come down and bleed. For the last four or five years has suffered pain on going to stool, has great difficulty in passing his motions, the bowel always prolapsing and bleeding. For the last twelve months has suffered more pain and lost more blood; there is no difficulty in returning the prolapse.

On admission he was suffering from extreme anæmia. There was no external swelling, but on introducing the finger, the rectum was found full of polypi, soft, vascular, and pedunculated, and varying in size from a pea to a small cherry.

Belongs to a family of six. His eldest brother died under my care with the same disease, and one sister suffers from it in a less degree than himself; two sisters and one brother have as yet shown no signs of it.

June 29.—The rectum was examined under chloroform; it presented precisely the same appearance as in the case of his brother. Eight or nine of the largest polypi were ligatured and removed. He ceased to bleed, and gradually recovered his strength, but on July 25th the hæmorrhage returned.

August 3.—Mr. Butlin removed six polypi with the galvanocautery.

August 18.—Six or seven more of the growths were removed in the same manner. On September 5th he was discharged to the Convalescent Hospital at Swanley.

## CASE III.

Martha C., æt. 16, was admitted into President Ward under my care, January 18, 1882. She was a sister of the two patients above mentioned. For seven years before admission she had suffered with symptoms of rectal polypi. Under chloroform the interior of the bowel was examined, and, as in the other cases, it was found studded with vascular pendulous polypi as far as the eye could reach. Three of the larger growths were ligatured and removed. A month later she left the Hospital, being for a time relieved of her symptoms.



## REMARKS.

By far the most complete account of this disease is contained in Mr. Cripps's work on diseases of the rectum, under the heading "Disseminated Polypi." He states that he has found only three specimens in a search through the London museums, and that he has met with only two instances of the disease in living patients. He also quotes a case by Mr. Bowlby.<sup>1</sup>

The first specimen, from the Middlesex Hospital Museum, is thus described:<sup>2</sup>—"The mucous membrane is thickly studded with growths, some forming simple rounded elevations, others stalked processes, varying in length from a quarter of an inch to an inch, with club-shaped ends. In many places the ends are branched, and in some the ends of neighbouring ones are united together, so as to form an irregular network. They extended from above a cicatrix, situated three inches from the anus, to within a short distance of the ileo-cæcal valve."

"The second specimen is in Guy's Hospital Museum. Here the stalks are very fine and of uniform diameter, projecting from half an inch to an inch into the bowel. They do not expand at their extremities into any definite head, and they are scattered pretty regularly over the surface of the bowel, there being one or two to each square inch."

The third specimen is in King's College Museum, and is thus described by Mr. Cripps:—"In this case the growths are undoubtedly adenoid. They were growing in the colon, and formed a mass the size of a cricket-ball. Each growth was pedunculated, varying in size from a pea to a hazel-nut, and they were about seventy in number."

"Many of the growths sprang from a common pedicle, others were isolated. The pedicles were from half an inch to two inches in length; some of them like the stalk of a cherry, others flattened and ribbon-shaped. Scattered through the rest of the colon were a few isolated polypi, but towards the rectum they again became more numerous."

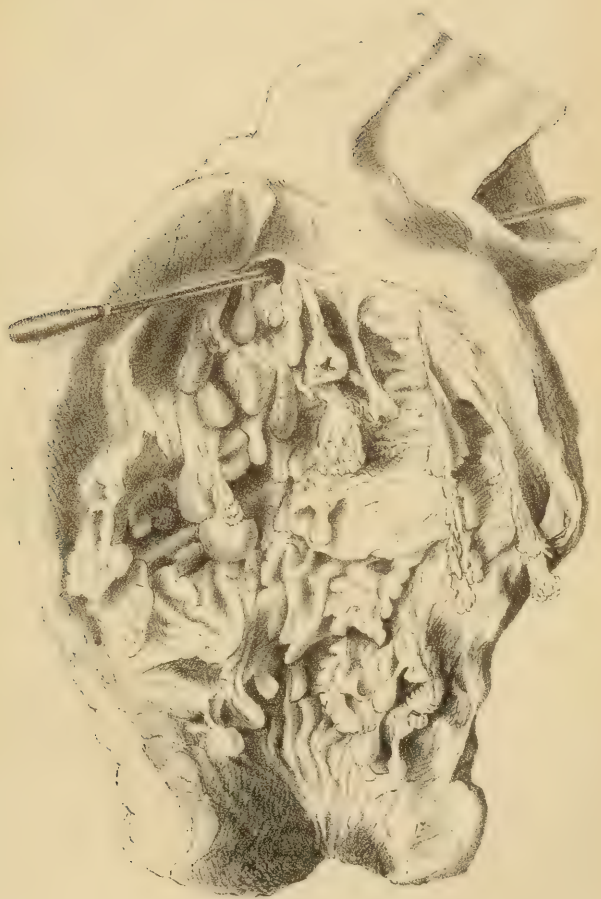
Two excellent woodcuts illustrate these specimens, and drawings are given of the microscopic structure of the individual polypi from one of the patients who was at that time living.

The two living patients whose cases are given by Mr. Cripps are the Cases 1 and 2 recorded above. Since then one has died, and the accompanying illustration represents the condition of the bowel.

In all the five museum specimens the polypi seem to have existed in varying numbers throughout the large intestine, being

<sup>1</sup> *Pathological Society's Transactions*, vol. xxxiv. p. 108.

<sup>2</sup> *Diseases of the Rectum*, Cripps, p. 273.



Leonard Marshall del. sculp.

West Newman & Co. lith.

Interior of the Rectum from the case of A.W.C.  
showing disseminated polyp and cancerous stricture.



most numerous towards the rectum. In my own case the polypi were very few and very small above the sigmoid flexure, but the patient died at the age of twenty-one, whereas the other patients were older. In two instances, the King's College specimen and the one figured here, the polypi were certainly adenoid in structure. In Mr. Bowlby's case they were fibrous, and probably they were of the same character in the other two cases.

One patient died from phagedœnic ulceration of the foot, one from peritonitis after the removal of some of the growths from the rectum, one of adenoid cancer; the cause of death in the other two is not stated.

The cases are here recorded on account of the rarity of the disease, and the fact that three members of the one family were affected; they are also noteworthy as bearing on the pathological anatomy of rectal cancer.

The polypi in all three of these patients were adenoid in structure, that is, the head of each growth was, as Mr. Cripps states, "an extreme exaggeration of the plan on which the normal mucous membrane is constructed." So long as these polypi grew free on the mucous surface and projected into the cavity of the bowel, they were clinically innocent in their nature; and thus they grew and thus they remained for many years in the case of Alfred C. They became, as one would say, malignant so soon as the abnormal development of adenoid tissue took place in an opposite direction, and thrust itself into the submucous structures; thus supporting Mr. Cripps's view that adenoid rectal cancer is primarily the growth and development of normal structures in an abnormal situation.

The microscopic examination of the cancer in this patient proved it to be similar in structure to the polypi, or, as Mr. Bowlby describes it, "a typical cylindrical-celled adenoid cancer," while the bulbous ends of the polypi were, in the arrangement of their structures, like masses of adenoid cancer turned inside out. Mr. Bowlby informs me that in a vertical section of the cancer it could be demonstrated that the stalks of some of the polypi could be traced through the mucous membrane into the submucous structures, where they were continuous with the structure of the cancer.





## CASES FROM MR. SMITH'S WARDS.

BY

R. F. JOWERS.

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### CASE I.—*Primary Lympho-Sarcoma of Posterior Mediastinal Glands involving the Right Lung, with enlarged Cervical Glands.*

E. H., æt. 23, single, was admitted into President Ward, July 21, 1887, suffering from dyspnoea. She is an anæmic, delicate-looking girl. Has had a cough since Christmas, but no difficulty in breathing till three weeks ago, though she has been troubled by shortness of breath on going upstairs. On April 15 she was admitted into the Charing Cross Hospital for pain in the right shoulder and right side of the chest. While there she spat up blood-streaked sputa for one month. Never had any severe hæmoptysis. She remained there two months. A fortnight after leaving she was as bad as ever. One month ago she noticed some hard lumps in her neck behind the jaw on the right side. Eight weeks ago she began to have difficulty in breathing, worse after any exertion, and especially after coughing. This difficulty has steadily increased.

*Previous history.*—Suffered from enlarged glands in the neck as a child.

*Family history.*—Her grandmother and an uncle on the mother's side died insane.

*Present condition.*—Patient is suffering from considerable dyspnoea. Inspiration stridulous. Voice altered in character, high pitched. There is a frequent metallic ringing cough, after which the dyspnoea is increased. Behind the ramus of the jaw, on the right side, is a mass of enlarged glands, each about the size of half a walnut and very hard.

*Chest.*—Expansion good. Percussion-note impaired at the right apex, where a few moist sounds are heard. Expiration loud and

prolonged both sides. Spits up about half a pint of watery mucus in twenty-four hours.

Respirations 30. Pulse 100, fair volume and force. Urine, sp. gr. 1035; no albumen; no sugar; acid. Larynx examined by laryngoscope, and found to be normal. Right tonsil enlarged and reaching nearly to middle line. Patient put to bed. Inhalations of vapor benzoini bis die. Steam-kettle kept constantly going.

July 24.—Dyspnoea much less. Still troubled by her cough. Ol. morrhuae  $\mathfrak{z}$ ii. bis die; linctus  $\mathfrak{z}$ i. p.r.n.

August 1.—Patient has greatly improved. Voice more natural. Breathing more easily. Syrupi ferri iodidi  $\mathfrak{z}$ i., Hst. pot. iodidi  $\mathfrak{z}$ i. ter die.

August 9.—Has no dyspnoea when lying quiet, and even after coughing is not much troubled. The glands behind the jaw are slightly larger. Complains of pain in abdomen whenever she sits up.

August 13.—Got up to-day, but her breathing became so bad that she had to return to bed.

August 27.—Severe attack of dyspnoea occurred last night. She was relieved by inhalations of vapor benzoini and hot sponges to the neck. Coughs up frothy mucus. Pulse 112, weak. Temperature normal.

August 28.—At 4 A.M. a very bad attack of dyspnoea and collapse occurred. She recovered somewhat after stimulants and hot sponges to throat and chest, though considerable dyspnoea continues. To-day the question as to the advisability of performing tracheotomy at once, and making an attempt to pass a catheter or tube beyond the obstruction, was raised, lest she should die in one of these severe attacks of dyspnoea.

August 29.—Last night, at 8 P.M., she had another severe attack. On re-examining the chest, it was found that the right side expanded very imperfectly. The percussion-note on the right side is impaired and higher pitched all over both front and back, and no air could be heard entering the right lung. No absolute dullness anywhere. Glands behind the jaw smaller and softer. Patient delirious, screaming, and very noisy.

August 30.—Breathing somewhat more easily.

August 31.—Had a good deal of dyspnoea during the night. Appears to be suffering from a hysterical attack; screams loudly, and then refuses to speak for two or three hours. Temperature 100.8°; last night, 101.2°. Pulse 136.

September 1.—Very noisy all night. Breathing more easily this morning. To-day it was found out that some of her relatives were insane.

September 2.—So noisy and violent that she has been strapped

and removed to the strong-room in Casualty. Is maniacal and using foul language. Temperature 101.4°. Pulse 104. Refuses to take food, and is fed through the nose by a tube. Chloral hydrat. gr. xx.; pot. brom. gr. xxx.; ex aq. ʒi. statim.

September 3.—Very noisy during the early part of night. Got a little sleep after a subcutaneous injection of morphia at 12 P.M. At 6 A.M. she had a convulsion, and the right side became very rigid; it lasted only a few seconds. She then got some more sleep. Died at 9 A.M.

*Post-mortem appearances.*—Brain and meninges healthy and natural. Pharynx, larynx, and trachea natural. All the glands of the right side of the neck were enlarged and occupied by firm new growth. The glands of the posterior mediastinum were the seat of a large mass of firm, opaque, white new growth, apparently of a lympho-sarcomatous nature. This had infiltrated the base of the right lung, and compressed and nearly obliterated the right bronchus. The whole right lung was œdematous and semi-solid. The left lung, the heart, and all the abdominal organs were healthy.

A microscopical examination of the tumour showed that it was a typical lympho-sarcoma.

REMARKS.—The diagnosis of malignant disease was not arrived at in the above case. It was believed to be one of tuberculous glands in the neck with similarly enlarged ones in the thorax. The disease was supposed at first to be pressing upon the trachea, but afterwards, when the signs were more marked, it obviously occluded the right bronchus. The fact that she had suffered from enlarged glands as a child favoured this view.

The usual signs of malignant disease of the thorax were not well marked. There was no absolute dulness anywhere, no bulging of the chest-wall, nor any marked wasting.

The enlarged glands in the neck did not point to sarcoma, and the absence of wasting and pain and the age of the patient did not suggest carcinoma. The similarity of the symptoms (the impaired resonance, hæmoptysis, and expectoration) to those of phthisis was very remarkable, and cases of malignant disease have not unfrequently been mistaken for phthisis.

On looking through several cases of intrathoracic tumour recorded in the *Lancet* and *British Medical Journal*, I find only one set down as sarcoma. Nearly all those described are encephaloid cancer, and in the majority of cases the left lung has been affected. In several there has been paralysis of the vocal cord on one side, materially aiding in the diagnosis. The mania was, I presume, due to the great mental distress caused by long and increasing dyspnoea, added to certain domestic troubles, acting upon a mind already hereditarily predisposed to insanity.



CASE II.—*Subacute Tetanus treated with Chloral Hydrate and Bromide of Potassium—Recovery.*‡

E. L., æt. 12, was admitted into Casualty Ward, August 19, 1887. On August 9th he fell down seven or eight iron steps, hurting his back and biting his tongue. On the following day he seemed to be well till the evening, when he expressed a desire to go to bed early, and his speech was noticed to be somewhat peculiar. Next morning seemed to be stiff about the jaws and unable to open his mouth. "Eyes wandering," but quite conscious. His mouth was "forced open" with a spoon in order to feed him. He was seen by a doctor, who ordered him to be fed through a straw. Bowels open two or three times a day. Motions very offensive. Breath foul. Urine thick and offensive. He has had scarcely any sleep, and has groaned frequently. Bowels not open last two days. Has got much thinner.

*Previous history and family history.*—Healthy.

*On admission.*—Is pale, fairly nourished, and apparently very ill. Groans frequently. There is a well-marked risus sardonius; forehead wrinkled, causing a somewhat surprised look. The masseter muscles are rigid, but he can with difficulty separate the teeth for a quarter of an inch, and through the aperture the tongue can be made out to be swollen, indented, and very foul. Breath very foetid. Speaks with difficulty, and almost unintelligibly. The muscles of the neck are stiff, and he turns his head with difficulty. There is some tenderness over the lower part of the back, but no external wound or history of one.

The abdomen is extremely hard and board-like. The legs are resistant to flexion, but not absolutely rigid. Arms not affected. On touching him, he has a slight spasm; the back becomes arched, the hamstring muscles tense, and the recti abdominis very hard; but he is not raised violently off the bed on his head and his heels. These spasms occur on any sudden noise or touch, and in them he frequently bites his tongue. They last two or three seconds. They occur also on waking. Temperature 99.6°. He was put to bed in a separate room in Casualty, and ordered Olei ricini  $\mathfrak{z}$ iii. statim. Chloral hydrat. gr. x.; pot. brom. gr. x.; aq. ad  $\mathfrak{z}$ i. statim et ter die, Glycerinum boracis for the mouth.

August 20.—Slept fairly during the night, and is sleeping this morning. Had one spasm yesterday from the clicking of the door-handle. Risus sardonius rather more marked. Masseters tense; cannot separate the teeth. Abdominal muscles the same. Breathing diaphragmatic. Bowels have not acted. Temperature

98.4°. Pulse 96, good volume. Pulv. calomelanos gr. iiss. statim. Is unable to pass his water. Drawn off.

August 21.—Condition much the same. Temperature 98.4°. Pulse 120. Bowels have not acted. Breath very foetid. Takes food well. Urine still drawn off. Calomel gr. iiss. repeated.

2 P.M.—Ol. crotonis ℥i. statim.

6 P.M.—Ol. crotonis ℥i. statim.

10 P.M.—Ol. crotonis ℥i. statim.

Calomel gr. v. to be given at 3 A.M. if the bowels have not acted.

August 22.—Bowels open freely after the calomel gr. v. Had several spasms yesterday; one during the night. Bit his tongue several times. Between 7 and 9 A.M. he has had only two spasms, as against eight or nine yesterday. Expression more natural. Abdomen slightly less hard. Opens his mouth a little better. Taking well. Milk; beef essence; two eggs. Pulse 100. Temperature 98.2°.

August 24.—Two spasms during the night. They resemble a sudden shiver, and last only a second. Mouth more natural. Eyes screwed up. Forehead still wrinkled. Did not sleep so well. One spasm this morning. Chloral hydrat. gr. x.; pot. brom. gr. x. 6tis horis; ext. cascar. sagrad. liq. ʒss. glycerine ʒi.; aq. ad ʒi. p.r.n.

August 25.—Was not sleeping so well last night. An additional dose of chloral and bromide was given at 2 A.M.

August 26.—Slept well. Bit his tongue once during a slight spasm. Is lying with right thigh flexed. Is very drowsy. Pulse 112, good volume and strength. Is able to pass water himself.

August 31.—Rigidity of abdomen less marked. Bites his tongue occasionally. Temperature subnormal.

September 5.—Has had no spasm and has not bitten his tongue for three days. Is sleeping with legs and thighs flexed. Calf muscles soft. Hamstrings still tense. Abdomen less hard. Takes very well. Put on fish-diet. Tongue is clean and not swollen.

September 10.—Steadily improving. Bit his tongue once last night. Sits up in bed. Abdomen still rather hard, and his forehead is wrinkled, causing a surprised expression. Can open his mouth and protrude his tongue.

September 14.—Has had no more spasms. Gets up while his bed is made. A red punctate rash has appeared over the lumbar and dorsal regions, and less markedly over the chest and abdomen (chloral rash?) Temperature subnormal. Chloral stopped. Tinct. opii, ℥ x. if there should be any spasms.

September 15.—Rash fading.

September 16.—Rash almost gone.

September 17.—Moved into general ward. Gets up to tea.

September 19.—Abdomen is quite soft this morning. There is still some stiffness about the hamstring muscles, causing a peculiar gait.

September 22.—Has had a slight attack of diarrhoea. Temperature  $99.4^{\circ}$ .

September 30.—Gets up every evening, and feels quite well. The only trace of the disease is slight wrinkling about the forehead.

October 3.—All the wrinkling has disappeared. Goes out in the square.

October 6.—Discharged to Swanley.

In this case the tetanus presumably followed on a wound of the tongue, caused by biting it when the boy fell downstairs. The foul state of the mouth and breath seem to favour the view of a toxic origin of the disease. The symptoms extended over a long period, five weeks intervening before the rigidity of the abdomen had disappeared, and seven weeks before all traces of the disease had gone. He was treated throughout with chloral hydrate and bromide of potassium. The temperature, except on admission, when it was  $99.6^{\circ}$ , and during a slight attack of diarrhoea, was always subnormal.

### CASE III.—*Multiple Mucous Polypi of the Bladder—Dilatation of the Ureters—Pyelitis—Death.*

A. P., æt. 9, was admitted into Henry Ward, under the care of Mr. Smith, July 16, 1887.

Four months ago patient became incapable of holding his water. Two months ago he passed blood in his water; never before or since. About the same time he began to suffer great pain in the hypogastrium and loins. The pain is worse on defæcation and when he passes water voluntarily, which he says he can do in a good stream. It is also increased by exercise and jolting. It has become much worse during the last nine days. He has never been sounded for stone. Has been an out-patient at the Children's Hospital, and has since been lying in bed at home.

*Present condition.*—Patient is a pale, poorly-nourished boy, and looks ill. There is great pain and tenderness over the hypogastrium, and the urine is constantly dribbling away. Temperature subnormal. Pulse 124, small. Tongue with a thick creamy fur.

July 17.—Has passed five pints of urine since admission.

July 18.—Patient anæsthetised. Sounded by Mr. Smith. No stone was discovered, but a soft mass prevented the sound from being turned to the right. Per rectum, this mass was felt in the region of the trigone, about two inches long by one inch wide. With one finger in the rectum and the other hand on the hypogastrium, this mass was easily felt, and seemed to be soft, somewhat circumscribed, and oval in shape. No fulness made out in the region of the kidneys. Temperature subnormal. Urine is very foetid, and contains albumen, urates, and pus.

July 21.—Bladder appeared to be considerably distended both last night and this morning, but only about eight or nine ounces were drawn off on each occasion. Urine very thick and foetid. Large amount of pus.

July 22.—Temperature  $102.5^{\circ}$ . Bowels open four times, accompanied by great pain. Is obliged to pass his motions directly he feels the desire, owing to the strong tenesmus. Appetite bad. Pulse 124. Bladder washed out with boracic acid  $\mathfrak{z}$ i. to the ounce of water. Has passed only sixteen ounces of urine in twenty-four hours. Still a great quantity of pus and very foetid.

July 25.—A swelling has appeared in the perineum. Urethra very tender. Temperature  $99.4^{\circ}$ . Passed yesterday eighteen ounces of urine. Is taking liq. morphiae  $\mathfrak{M}$  v. inf. buchu.  $\mathfrak{z}$ i. ter die.

July 26.—Patient looks ill. Temperature  $100.4^{\circ}$ . There is an abscess forming in the perineum. Lips parched and covered with sordes. Tongue dry and brown. Eyes half-closed. Semi-conscious. Has passed only ten ounces of urine in twenty-four hours for the last two days.

Died at 10 P.M.

A post-mortem examination was made by Mr. Bowlby.

*Thorax*.—Natural.

*Abdomen*.—Stomach, liver, spleen, and intestinal glands natural.

Kidneys much enlarged; pelves and calices dilated. Renal tissues dark red, with numerous patches of suppuration. Capsule thickened, and easily separated. Ureters dilated to size of little finger.

The bladder was much hypertrophied and somewhat dilated. On laying it open, some decomposing urine and pus escaped. The trigone and the whole bladder-wall over an area which extended in all directions from the urethral orifice for a distance of about an inch and a half to two inches, was occupied by polypoid growths. The polypi were numerous, and their stalks were mostly slender. In many places the growths were compound, one stalk bearing several tumours; they varied in size. Some were no larger than a pea, and closely resembled the small hypertrophied synovial fringes met with in osteo-arthritis. Other growths were as large



as the top of the finger or thumb. The two largest polypi were found loose in the bladder. On the left side of the bladder wall, and to a less extent on its posterior surface, were some sessile growths of similar nature to the polypi already described. In these situations also the mucous membrane of the bladder was ulcerated. The polypi on section were soft, fleshy, and gelatinous. The muscular coat was inflamed, but not infiltrated. Microscopical examination showed that the growths were composed of myxomatous tissue, in which were numerous oval connective tissue cells, and that the kidneys were in a state of suppurative inflammation. (The specimen and microscopical sections are preserved in the Museum, Series xxix. 2417A.)

The above case is interesting from the extreme rarity of the disease. The patient on admission was suspected to have a vesical calculus; but that being negatived by the sounding, the large amount of pus, and the fœtor of the urine, together with the mass felt per rectum, led us to suppose he was probably suffering from tuberculous disease of the genito-urinary tract.

THE  
ASSOCIATION OF PULMONARY TUBERCULOSIS  
WITH DISEASE OF THE HEART.

BY  
PERCY KIDD, M.D.

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It is well known that it is uncommon to find phthisis and disease of the heart in the same patient ; indeed, some authors have asserted that the two diseases never occur together.

Rokitansky ("Path. Anatomy," vol. i. p. 316, Sydenham Soc. trans.) writes as follows:—"Persons labouring under enlargement (dilatation, hypertrophy, and their complications) of the heart, whether primary or superinduced by mechanical obstruction at its orifices, do not contract tuberculosis. Nor does tuberculosis coexist with such congenital vices of formation in the heart or the great arterial trunks, which, with their complications, result in venosity and cyanosis, and, as the anatomical measure of their significance, in augmented volume of the heart.

"Next in the series we have to mention the immunity afforded by many acquired anomalies of arterial trunks, which resemble congenital vices of formation, such as coarctation from compression, obstruction, obliteration, or again by large aneurysms in the vicinity of the heart. The same immunity is attained in venosity and cyanosis owing to hindrance to the pulmonary circulation, more especially where the impediment reveals its serious character by a dilatation of the right heart."

Further on he speaks of the immunity from tuberculosis conferred by deformity of the chest (whether due to rickets, lateral curvature, or caries of the vertebræ), pleural effusion, pregnancy, enlargement of the abdomen, or any other condition that leads to embarrassment of the thoracic space, and consequently to obstruction to the passage of venous blood through the right heart. Chronic catarrh, vesicular emphysema, and bronchial dilatation

were, he says, recognised even by Laennec as conditions antagonistic to the development of tuberculosis.

Again, vol. iv. p. 251: "All cyanosis, or rather all forms of disease of the heart, vessels, or lungs, inducing cyanosis of various kinds and degrees, are incompatible with tuberculosis, against which cyanosis offers a complete protection; and herein we find a key for the solution of the immunity against tuberculosis afforded by many conditions which at first sight appear to differ so widely from one another."

Traube held that the moist engorged state of the lungs of persons suffering from heart-disease renders them less likely to undergo caseous degeneration if they should be attacked by pneumonia.

Similar opinions were expressed by Niemeyer.

Other writers drew attention to the comparatively frequent concurrence of tuberculosis and congenital heart-disease.

Peacock<sup>1</sup> gives references to several cases of congenital stenosis of the pulmonary orifice in which tuberculosis coexisted. He also mentions a case (No. xiv.) where the foramen ovale remained open without other defect of the heart, in which the patient died from phthisis. The mitral orifice in this case is described as being small, the valves white, thick, and somewhat rigid.

Remarking on these cases (p. 190), he says: "It is possible that the venous condition may, as supposed by Laennec, be in some degree opposed to the occurrence of tuberculous affections, but this opposition certainly in no degree amounts to an incompatibility, as asserted by Rokitsky."

Dr. Pollock speaks thus:<sup>2</sup> "Disease of the heart, whether of the walls or valves, is by no means an unfrequent concomitant of phthisis." But a few lines farther on, after referring to Rokitsky's views, he says that both hypertrophy and dilatation of the heart retard the progress of tuberculosis, and that a prognosis for length of duration may safely be offered. In Dr. Pollock's experience no history of rheumatism is obtainable in a considerable proportion of these cases.

The left lung is usually first affected, hæmophysis is often the first pulmonary symptom, wasting is seldom extreme, dyspnoea is a prominent feature, and death occurs rather from the cardiac than from the pulmonary affection.

Lebert,<sup>3</sup> commenting on the remarkable tendency of the subjects of congenital heart-disease to contract phthisis, points out that pulmonary stenosis is the form of congenital morbus cordis which specially displays this tendency, pulmonary tuberculosis having

<sup>1</sup> *Malformation of the Heart*, 2nd edit., p. 189.

<sup>2</sup> *Elements of Prognosis in Consumption*, p. 272.

<sup>3</sup> *Ziemssen's Cyclopædia*, English trans., vol. vi.

been present in no less than one-third of all the cases of this affection that he was able to collect. Attention is also called to the fact that in pulmonary stenosis the lungs are often small and ill-developed, and the pulmonary circulation is irregular and disturbed. In cases where communication exists between the right and left chambers of the heart without pulmonary stenosis, phthisis is rarely found.

Ruehle<sup>1</sup> classes valvular disease of the heart among diseases antagonistic to phthisis. The latter affection is less uncommon with aortic than mitral lesions, mitral stenosis being very rarely found with phthisis.

In Fagge's "Principles and Practice of Medicine," vol. i. p. 994, it is said that one form of heart-disease, mitral stenosis, is an almost complete bar to the development of phthisis, the post-mortem records at Guy's Hospital supplying only four cases of this association in the last thirty years. Rokitsansky's explanation is considered to be insufficient in face of the fact that those who have congenital pulmonary stenosis are exceedingly apt to die of tubercular disease of the lungs.

The following is a brief abstract of the cases of associated morbus cordis and phthisis in which I have made a post-mortem examination. Want of space forbids my giving any detailed description of the condition of the lungs. I have therefore only mentioned the most salient features of each case. Well-marked tuberculous lesions were present in every instance.

1. Wm. B., æt. 41. Phthisis. Endocarditis. Granular kidney. Arterio-sclerosis.

Rheumatic fever twice, fourteen years and nine years previously. Signs of phthisis on admission. Two weeks in the Hospital.

Lungs.—Excavation of left, emphysema of right lung.

Heart, 14 oz. Left ventricle greatly dilated and slightly hypertrophied. Button-hole mitral orifice, admitting the tip of one finger. Valves rigid, thickened, and contracted. Aortic valves thickened and calcareous, causing slight stenosis and marked incompetence.

2. Ellen S., æt. 46. Pulmonary phthisis. Tubercular ulceration of the intestine. Endocarditis. Granular kidney. Amyloid spleen.

Rheumatic fever twenty-one years ago. Signs of phthisis on admission. In Hospital two months.

Lungs.—Excavation of left, emphysema of right lung.

Heart, 6½ oz.; rather small. Aortic valves thickened, puckered, and retracted, causing stenosis and incompetence. Some granulations on the diseased valves.

3. John L., æt. 24. Phthisis. Tubercular ulceration of the

<sup>1</sup> Ziemssen's Cyclopædia, English trans., vol. v. p. 507.



intestine. Endocarditis. Infarction of spleen. Cirrhosis of the liver. Cerebral embolism and aneurysm. Death from cerebral hæmorrhage.

Rheumatic fever four years ago. No signs of phthisis during life. In Hospital four months.

Lungs.—Fibro-caseous nodules and miliary tubercles in both apices. No cavities.

Heart, 15 oz. Hypertrophy and dilatation of left ventricle. Aortic valves incompetent, being much thickened and beset with soft pendulous vegetations. Mitral valves thickened and fringed with small granulations. One of the chordæ tendineæ ruptured.

4. Jas. K. (? age). Phthisis. Endocarditis. Arterio-sclerosis. "État mamelonné" of stomach. Calculous atrophy of one kidney.

Admitted in moribund state. No history obtained. In Hospital two days.

Lungs.—Excavation of left, nodular disease of right lung.

Heart, 14 oz.; large. Pericardial adhesions. Left ventricle slightly hypertrophied and dilated. Mitral and aortic valves thickened. Granulations on the mitral.

5. Henrietta B., æt. 36. Pulmonary tuberculosis. Tuberculous pleurisy. Endocarditis.

Two attacks of rheumatic fever, seven and three years previously. Pleuritic effusion on admission; tubercle-bacilli in the fluid. In Hospital two months.

Lungs contained scattered fibro-caseous nodules.

Heart, 8 oz. Mitral and aortic valves thickened. Aortic valves much puckered, causing stenosis and incompetence.

6. John K., æt. 60. Pulmonary and intestinal tuberculosis. Endocarditis. Arterio-sclerosis. Infarction of spleen. Fatty liver.

Rheumatic fever thirty years ago. Signs of phthisis on admission. In Hospital three months.

Lungs.—Fibro-caseous nodules at both apices, causing puckering at these points.

Heart, 18 oz. Hypertrophy and dilatation of all chambers. Much thickening of both aortic and mitral valves, which are fringed with vegetations. Slight ulceration on the auricular surface of the latter. Mitral orifice dilated.

7. Harriet P., æt. 22. Pulmonary tuberculosis. Ulcerative endocarditis. Infarction of spleen. Parenchymatous nephritis.

No history of rheumatism.

Signs of phthisis on admission. In Hospital four months.

Lungs.—A few very small cavities in both apices and some tough caseous nodules in the left upper lobe.

Heart, 22 oz. General hypertrophy and dilatation, most marked in the case of the left ventricle. Recent fibrinous pericarditis. Large soft vegetations on aortic valves, with ulceration and perforation of one valve. Pulmonary valves healthy, but just beyond them masses of vegetations are seen springing from the walls of the pulmonary artery, which is dilated.

The cavities in the lung were so small and sharply defined, there being no nodules in the right lung at all, that their nature appeared a little doubtful. Scrapings from their walls, however, contained tubercle-bacilli.

8. Martha M., æt. 16. Phthisis. Endocarditis, Amyloid disease. Tubercular ulceration of the trachea.

The patient had suffered from rheumatic pains, but was never laid up with them. Signs of phthisis on admission. In Hospital six weeks.

Cavities in both lungs, tubercular nodules, and large caseous masses.

Heart, 6 oz.; relatively large. Left ventricle dilated; mitral orifice somewhat contracted. Luxuriant soft vegetations on the auricular aspect of the valves, giving rise to some stenosis and incompetence.

9. Wm. E., æt. 27. Phthisis. Intestinal tuberculosis. Endocarditis.

Rheumatic fever two years ago. Signs of phthisis on admission. In Hospital seven weeks.

Lungs.—Excavation of left, nodular disease of right lung.

Heart (? weight). General hypertrophy and dilatation, especially of left ventricle. Aortic valves thickened, retracted, and beset with granulations; aortic valves incompetent.

10. Wm. A., æt. 22. Phthisis. Miliary tuberculosis and fatty degeneration of the liver. Endocarditis.

Rheumatic fever two months ago. Signs of phthisis on admission. In Hospital seven weeks.

Lungs.—Excavation of left, nodular disease of right lung. Pleuritic effusion.

Heart, 10 oz. Granulations on aortic and mitral valves.

11. Wm. J., æt. 39. Phthisis. Tuberculosis of trachea, intestine, and mesenteric glands. Endocarditis.

"Rheumatism," probably rheumatic fever, five years ago. Signs of phthisis on admission. In Hospital four weeks.

Advanced excavation of both lungs.

Heart, 12 oz. Adherent pericardium. Mitral orifice dilated. Mitral and aortic valves thickened and beset with granulations.

12. Chas. C., æt. 25. Phthisis. Endocarditis. Fatty liver.  
No history of rheumatism. Signs of phthisis on admission. In Hospital six days.

Excavation of both lungs.

Heart, 14 oz. Hypertrophy and dilatation. Granulations on aortic and mitral valves.

13. Henry R., æt. 30. Phthisis. Tuberculosis of mediastinal glands and intestine. Endocarditis.

No history of rheumatism.

Lungs.—Excavation of right, nodular disease and emphysema of left lung.

Heart, 11 oz. Granulations on aortic and mitral valves, the latter valves thickened.

14. Thos. B., æt. 37. Phthisis. Endocarditis. Parenchymatous nephritis. Fatty liver.

Rheumatic fever seven years and twelve months ago.

Lungs.—Excavation and cirrhosis of left, nodular disease and emphysema of right lung.

Heart, 13 oz. Slight hypertrophy of both sides, with dilatation of right chambers. Granulations on aortic and mitral valves.

15. Chas. B., æt. 39. Phthisis. Tuberculosis of larynx and mesenteric glands. Endocarditis. Granular kidney.

"Rheumatism," probably rheumatic fever, twice within the last year.

Lungs.—Excavation of both, more advanced in the right lung.

Heart, 13 oz. Slight hypertrophy and dilatation. Mitral valves thickened and fringed with granulations.

16. John D., æt. 39. Phthisis. Tuberculosis of intestine. Endocarditis. Fatty liver.

No history of rheumatism.

Lungs.—Fibrosis and excavation at right apex; nodular disease below and in left lung.

Heart, 14 oz.; enlarged. Some vegetations on aortic valves; large masses on the auricular surface of the mitral.

17. Mary O., æt. 36. Phthisis. Tuberculous pleurisy. Adherent pericardium. Fibroid disease of heart. Ascites. Granular kidney.

Rheumatic fever four years ago. No signs of phthisis during life. In Hospital nine months.

Lungs contained scattered fibro-caseous nodules.

Heart, 18½ oz. Pericardium adherent. General dilatation. Left ventricle slightly hypertrophied. Valves free from disease. Circumscribed fibroid disease of wall of left ventricle.

18. Grace B., æt. 23. Pulmonary and intestinal tuberculosis. Scarring of trachea (? syphilitic). Endocarditis.

No history of rheumatism.

Lungs.—Cavities in both, with much fibrosis.

Heart, 8 oz. Granulations on the aortic and mitral valves.

19. John M., æt. 43. Phthisis. Endocarditis. Granular kidney. Perihepatitis.

No history obtainable.

Cavities and fibrosis in both lungs.

Heart,  $13\frac{1}{2}$  oz. Granulations on aortic and mitral valves.

20. Edwin L., æt. 29. Phthisis. Endocarditis.

No history of rheumatism.

Lungs.—Cirrhosis and excavation in both.

Heart,  $13\frac{1}{2}$  oz. Right side dilated. Granulations on mitral valves.

21. Susanah T., æt. 34. Phthisis. Pneumo-thorax. Endocarditis. Granular kidney. Fatty liver.

No history of rheumatism.

Lungs.—Excavation on both sides ; more advanced in the right lung.

Heart, 9 oz. Granulations on the mitral and tricuspid valves.

22. Thos. T., æt. 21. Tuberculosis of the lungs, trachea, intestine, mesenteric and mediastinal glands. Endocarditis.

No history of rheumatism.

Lungs.—Excavation on both sides ; more advanced on left.

Heart,  $7\frac{1}{4}$  oz. Granulations on mitral valves.

23. Geo. M., æt. 21.—Phthisis. Tuberculosis of mediastinal glands. Endocarditis.

No history of rheumatism.

Lungs.—Excavation of both ; oldest disease at left apex.

Heart, 13 oz. Granulations on mitral and tricuspid valves.

24. Clara G., æt. 17. Phthisis. Tuberculosis of intestine, mediastinal and mesenteric glands. Endocarditis.

No history of rheumatism.

Lungs.—Excavation and contraction of left, nodular disease of right lung.

Heart, 6 oz. Granulations on mitral valves.

25. Joseph R., æt. 46. Phthisis. Endocarditis.

No history of rheumatism.

Lungs.—Excavation of both ; more advanced on right, which is contracted ; emphysema of left lung.



Heart, 12 oz. A long pendulous vegetation attached to one of the aortic valves.

27. Thos. B., æt. 60. Phthisis. Tuberculosis of peritoneum and mesenteric glands. Endocarditis. Necrosis of sternum.

No history of rheumatism.

Lungs.—Excavation on both sides.

Heart (? weight), not enlarged. Granulations on mitral valves.

27. Wm. M., æt. 24. Phthisis. Pneumo-thorax. Tuberculosis of intestine. Endocarditis.

No history of rheumatism.

Excavation of both lungs.

Heart, 12 oz. Granulations on mitral valves.

#### *Cases of Aneurysm associated with Tuberculosis.*

1. Robert B., æt. 49. Aneurysm of the aorta perforating the œsophagus. No pressure on air-tubes or lungs.

Both lungs contained small fibro-caseous nodules scattered through their substance. Miliary tubercle on the pleura and in the mediastinal glands.

No signs of phthisis during life. In Hospital six weeks.

2. Thos. L., æt. 50. Aneurysm of the aorta. Pressure on the trachea.

Apices of lungs puckered, and contain some fibro-caseous nodules and miliary tubercles.

No signs of phthisis during life. In Hospital ten days.

3. Wm. J., æt. 42. Aneurysm of the aorta. Pressure on the left bronchus. Rupture into the left pleural cavity.

A few fibro-caseous nodules in the upper lobes of both lungs, and in the upper part of the right lower lobe also.

Died in the out-patient room before being examined.

4. George P., æt. 43. Aneurysm of the aorta. Perforation of the trachea.

Both lungs contain scattered small pigmented fibroid nodules, most plentiful at their apices, in which position there are also some dry crumbling caseous patches.

No signs of phthisis during life. In Hospital eighteen days.

5. Alfred S., æt. 33. Aneurysm of the aorta. Pressure on the trachea.

Mediastinal glands beneath the bifurcation of the trachea enlarged and caseous.

In Hospital one day.

To turn now to the clinical aspect of the question.

During the last six years I have met with twenty-five or twenty-six cases of phthisis in which cardiac murmurs were present, and were attributed to disease of the valves. I omit mention of many cases of phthisis associated with murmurs the origin of which was doubtful.

The greater number of cases of presumed valvular disease presented systolic murmurs at the apex; in a few instances a systolic murmur was heard in the aortic area.

In five cases a præsystolic murmur was heard at the apex.

In two cases there was a diastolic aortic murmur.

A præsystolic mitral murmur or a diastolic murmur at the base, with concomitant signs of dilatation or hypertrophy, admits of little doubt as to the existence of structural disease of the mitral or aortic valves.

Again, in other cases where a persistent systolic murmur was conveyed to the back, we may assume that a mitral lesion was present.

The cases which present difficulties of diagnosis may be divided into two classes:—

1. Cases of manifest heart-disease where there is doubtful evidence of phthisis. Examination of the sputum may enable us to form a positive opinion; but if the evidence be negative, the progress of the case alone can decide the point.

2. Cases of undoubted phthisis with equivocal signs of heart-disease. A history of rheumatic fever and signs of enlargement of the heart, combined with the presence of a murmur in the mitral or aortic regions, would strongly suggest a cardiac lesion.

Difficulties mainly arise in the absence of signs of enlargement of the heart where systolic murmurs are heard towards the base of the heart, usually on the left side. A systolic murmur in the pulmonary area may be due to anæmia, to retraction of the left lung uncovering the pulmonary artery, to traction and pressure exercised on the artery by a contracting lung, to the impulse communicated to the air contained in a neighbouring pulmonary cavity by the movements of the heart, or to pericardial or pleuro-pericardial friction. A systolic murmur over the aorta may be due to any of the three last causes, but equivocal murmurs are much more often heard in the pulmonary area, which, as Dr. Balfour remarks, has been termed "the region of romance." It is impossible on the present occasion to consider the diagnosis of these different conditions which is discussed in Balfour's book on "*Diseases of the Heart*," in Guttman's "*Handbook of Physical Diagnosis*," and in other works.

The following are a few selected clinical cases which illustrate the association of morbus cordis and phthisis:—

1. *Aortic Incompetence—Phthisis.*

Thos. E., æt. 34. Rheumatic fever at the age of sixteen and several times since, the last attack four years ago. Winter cough the last six years. Was lately operated upon at St. Thomas's Hospital for fistula.

The patient has suffered for four or five months from palpitation. Cough for two months, with loss of flesh and streaky hæmoptysis at times. Intense anæmia. Pulse sudden; volume rather small.

Heart.—Præcordial dulness increased to the left. Impulse forcible. A diastolic aortic murmur audible down the sternum and at the apex, but loudest at the fourth left costo-sternal articulation. At the apex the first sound is loud and impure.

Lungs.—At the left apex, slight dulness; harsh tubular breath-sounds; increased vocal resonance and sub-crepitant râles. At the right interscapular region slight dulness.

The sputum contained tubercle-bacilli in small numbers. No change occurred during the two months the patient remained under observation.

2. *Aortic Incompetence—Phthisis.*

William R., æt. 22. Father and paternal grandmother died of phthisis. No history of rheumatism. Was liable to epistaxis from the age of twelve to eighteen.

One year ago he suddenly spat up a pint of blood while carrying a heavy load. There had been a slight cough for three months previously, but since the hæmoptysis cough had been persistent, and he occasionally brought up a little blood.

Profuse hæmoptysis recurred ten days ago. For the last few months he had suffered from palpitation.

The patient is very anæmic. Pulse, 102; large, sudden, regular. Artery slightly thickened.

Heart.—Præcordial dulness, increased to the left. Impulse diffused and slightly heaving. A diastolic aortic murmur conveyed down the left edge of the sternum and heard at the apex, loudest at the third left costo-sternal articulation. Second sound at the base not entirely lost; first sound at the apex loud.

Lungs.—At the left apex slight dulness; weak tubular breathing and bronchophony. In front sub-crepitant râles; creaking sounds behind.

The patient attended for ten weeks and improved slightly, without any change taking place in his physical condition. Epistaxis occurred on two or three occasions.

3. *Mitral Stenosis—Pulmonary Phthisis.*

Mary D., æt. 33, housemaid. One brother died of phthisis.

Illness of one year's duration. Cough, expectoration, shortness of breath, night-sweats, and wasting. No hæmoptysis. Patient is a tall, thin, anæmic woman.

Heart.—Præcordial dulness, increased somewhat upwards and to the left. At the apex a præ systolic murmur.

Lungs.—At the left apex dulness and bronchial breathing.

In the course of a few months signs of a cavity developed at the left apex, with amphoric sounds and gurgling râles. The præ systolic murmur became less distinct, and was replaced by a short systolic murmur, the first sound at the apex retaining its short, abrupt character, and the second sound being reduplicated.

The patient was under observation off and on for two years without any material change in physical signs.

4. *Mitral Stenosis—Phthisis.*

Elizabeth R., æt. 33. No history of rheumatism, chorea, or scarlet fever. The present illness began eighteen months ago, with cough, expectoration, and slight wasting. No hæmoptysis. Patient is a fine, large, well-nourished woman. Pulse weak, small, and regular.

Heart.—Præcordial dulness, increased upwards and to the left. At the apex a faint præ systolic thrill and a short præ systolic murmur; first sound loud and abrupt, second sound clear.

Lungs.—At both extreme apices dulness, harsh tubular breathing, bronchophony, and obscure râles on coughing.

The sputum was examined twice without positive result, but the third time a few tubercle-bacilli were detected.

The patient has attended for six months, and still remains under observation. The main symptoms are troublesome cough and shortness of breath.

The physical signs have not undergone any alteration.

5. *Mitral Stenosis—Phthisis.*

Jane W., æt. 42. Laid up five years ago with "rheumatic gout."

The present illness dates from her confinement eighteen months ago, when cough commenced.

At the right apex, dulness, tubular breathing, and coarse râles. Slight dulness, coarse breath-sounds, and bubbling râles over the



upper third of the left lung. No cardiac murmur was detected at this time.

The patient has continued under observation at intervals for the last six years. The disease of the right lung has progressed slightly, signs of excavation having appeared at the apex more than three years ago. There are now no abnormal signs in the left lung.

A few months ago a short præ systolic murmur was discovered at the apex of the heart, the first sound being loud and abrupt, the second sound clear. No further change has taken place in the physical signs. There have been occasional attacks of slight hæmoptysis.

#### 6. *Mitral Stenosis—Phthisis.*

Ellen G., æt. 34. Has had rheumatism in the legs, but not rheumatic fever.

For the last twelve months has suffered from palpitation. Six months ago she had "inflammation in the side" and bronchitis, and she spat a little blood. Since then she has had cough and shortness of breath. Anæmia well marked.

Lungs.—At the right apex slight dulness, weak blowing breathing, and sub-crepitant râles. Slight dulness at the left apex in front.

Heart.—Præcordial dulness increased to the right, upwards, and to the left. At the apex a præ systolic thrill and murmur; first sound loud, second sound clear. At times a short systolic murmur was heard at the apex following the first sound.

#### 7. *Mitral Stenosis—Pulmonary Phthisis.*

Ernest A., æt. 20, clerk. One sister died of phthisis. No history of rheumatism or scarlet fever.

The present illness began two years ago with cough and shortness of breath. During the last twelve months there have been repeated attacks of hæmoptysis. The patient is a very anæmic, thin lad.

Heart.—Præcordial dulness much increased upwards, to the left and to the right. At the apex a marked præ systolic thrill; a long rough murmur commencing at the beginning of the diastole and running up to a loud abrupt first sound, which is followed by a short harsh systolic murmur. No second sound heard at the apex, but this sound is much accentuated over the pulmonary area, and is reduplicated here and to left of the sternum generally. A short exocardial murmur at the mid-sternum.

Lungs.—At the right apex slight dulness, tubular breath-sounds, increased vocal resonance, and scanty sub-crepitant râles and sonorous rhonchus.

Tubercle-bacilli in the sputum in small numbers.

This patient was in the Hospital twelve months previously with mitral stenosis, but at that time there were no signs of any pulmonary disease.

I have to thank my colleague, Dr. Tatham, for permission to publish this case and the following one.

### *8. Mitral Disease—Pulmonary Phthisis.*

Frank D., æt. 26, clerk. Mother, two sisters, and a brother died of phthisis. One brother died of heart-disease.

Scarlet fever ten years ago. Rheumatic fever six years ago. The present illness began five months ago, with cough, expectoration, and shortness of breath. No hæmoptysis.

Heart.—Præcordial dulness, increased slightly upwards and to the left.

At the apex a short, rough systolic murmur, audible as far outwards as the axilla, but not behind. The murmur begins with an indistinct thumping first sound. The second sound at the apex is clear, and over the pulmonary area is accentuated and reduplicated.

Lungs.—At the right apex, dulness, tubular breathing, pectoriloquy, and abundant coarse crackling râles. Tubercle-bacilli in sputum in large numbers.

### *9. Mitral Incompetence—Pulmonary Phthisis.*

Sophia M., æt. 25. Rheumatic fever at the age of eleven years. Winter cough for three years. Cough aggravated and continued the last eighteen months, with shortness of breath. The sputa have been streaked with blood occasionally.

Heart.—Præcordial dulness increased much to the left and upwards. Pulsation diffused over area of dulness. At the apex a systolic murmur, which is conveyed to the back, and is clearly audible at the angle of the left scapula. Second sound reduplicated in the pulmonary area.

Lungs.—Over the upper half of the left lung dulness to percussion, with cavernous breathing, pectoriloquy, and gurgling râles at the apex. Scattered moist râles over the lower parts of the lung and at the right base.

No change occurred in the physical signs during the six months the patient was under observation.

The cases narrated show that disease of the heart and phthisis are not incompatible. The twenty-seven post-mortem cases were met with in making autopsies on five hundred cases of phthisis. In the first eleven cases old valvular disease existed, and in most of these the cardiac affection probably preceded the development of tuberculosis.

In all the five cases of aneurysm, tuberculosis was secondary.

It is uncertain whether endocarditis or phthisis was established first in more than half the total number of cases, though in the majority of these it is fair to assume that tuberculosis was the primary disease. The tuberculosis ran a chronic course in almost every case, thus bearing out Dr. Pollock's statements. No marked preference for either lung was shown in these cases.

The occurrence of rheumatism is noted in twelve cases, and it is remarkable that the rheumatic cases almost exactly correspond to the cases in which old endocarditis and dilatation or hypertrophy were found. In the non-rheumatic cases it is difficult to account for the development of granulations on the cardiac valves in the course of phthisis. Whether or no there be any ætiological connection between the tuberculous process and endocarditis must remain at present uncertain.

It is said that Cornil found tubercle-bacilli in the valvular vegetations in a case of phthisis with endocarditis. I have not succeeded in discovering tubercle-bacilli or any tuberculous structure in the granulations in similar cases.

It is clear that Rokitsky's doctrine is too exclusive, but at the same time it expresses an important truth. The objection which is considered to be fatal to Rokitsky's explanation turns on the tendency of persons suffering from congenital pulmonary stenosis to contract phthisis. The importance of this argument has, I believe, been exaggerated. In such persons, as Lebert says, the lungs are often small and undeveloped, and their nutrition must be below the average. And although the bronchial arteries are abnormally developed, so as to supplement the pulmonary circulation, it must be remembered that the lungs are very inadequately supplied with blood. The defective nutrition of the pulmonary epithelium must render it less capable of resisting the action of the tubercular or other virus entering through the medium of the atmospheric air.

In fact, such persons are born with imperfect lungs, and it is not to be wondered at that these organs should be prone to so common a disease as tuberculosis. Cases of this description do not invalidate the general correctness of Rokitsky's statement, that an antagonism exists between phthisis and heart-disease. They do prove that vascosity of the blood is not the only factor in this

opposition. The fact, too, that phthisis almost invariably runs a chronic course when associated with *morbus cordis*, gives some support to the doctrine of antagonism.

Moreover, the comparative immunity from tuberculosis enjoyed by the subjects of emphysema and chronic bronchitis, conditions which lead to passive congestion of the lung, similar to that which directly or indirectly results from all valvular affections of the heart, naturally suggests that venosity of the blood opposes some obstacle to the tubercular virus. It has been denied that chronic bronchitis and emphysema interfere with the establishment of phthisis, inasmuch as many patients suffering from phthisis give a history of chronic catarrh previous to the onset of what appears to be a fresh complaint. No doubt this is so in certain cases, but it is probable that in quite as many instances the apparently new disease is nothing more than an outburst of an old smouldering phthisis. A parallel to this is found in the periodical attacks of acute nephritis which may occur in the course of such a chronic and insidious disease as granular kidney.

It is certainly uncommon to witness the transition of an uncomplicated emphysema or chronic bronchitis into phthisis, though it is common enough to observe an apparent transformation in the case of patients who at first presented evidence of these affections without any direct sign of phthisis, but in whom, from various causes, it was anticipated that a chronic tuberculosis lay at the root of the disorder. On the whole, it seems that Rokitansky's view is true, though in a more limited sense than he himself intended.

All diseases of the heart which lead directly or indirectly to passive congestion of the lungs, and thereby to venosity of the blood, afford a certain amount of protection against tubercular affections, but, in the words of Peacock, "this opposition certainly in no degree amounts to an incompatibility."

Probably other conditions of which we are at present in ignorance combine with venosity of the blood to confer a certain protection on persons suffering from cardiac disease.

There is one other point to which I may allude, viz., the question whether tubercular infection may have occurred in the Hospital in those cases where the heart-affection was old and the phthisis was comparatively recent.

The only cases in which this question could be raised are the first eleven in the list, No. 17, and the five cases of aneurysm. In these cases the heart-disease or aneurysm was of old standing, and the phthisis in nearly all was relatively in a less advanced stage.

On referring to the cases, it will appear from a comparison of the length of time the patients were in the Hospital with the



condition of the lungs found after death, that there are only two cases of morbus cordis and one case of aneurysm which at all support the idea that tuberculosis was contracted in the Hospital. In the two heart cases the patients spent four months and nine months respectively in the Hospital, and the tubercular disease may have developed during that time.

One patient, No. 3, was suffering from hemiplegia as the result of embolism for some months; the second patient, No. 17, had persistent ascites, for which tapping had to be performed on ten or twelve occasions. Consequently the vitality of these patients must have been for months at a very low ebb.

In the case of the patient with aneurysm, No. 1, who was six weeks in the Hospital, it is doubtful whether the tuberculosis arose in the Hospital or not. The pulmonary lesions may well have been of older date than six weeks.

I mention this question as the cases referred to made a considerable impression on my mind at the time, and the same point may occur to others.

However, on comparing the clinical history with the pathological lesions, and taking into account the duration of the patients' stay in the Hospital, the cases in which the theory of infection seemed possible dwindled down to three.

I suspect that an examination of the post-mortem records of general hospitals and infirmaries would show that it is not uncommon to find comparatively recent tubercular lesions in persons that have been confined to bed for months with other diseases.

CASES FROM MR. WILLETT'S WARDS,  
ILLUSTRATIVE OF  
THE TREATMENT OF LONG-STANDING SUPPURATION  
BY CONTINUOUS WARM BATHS,  
BY  
H. P. CHOLMELEY, M.B., AND HAROLD DAVIDSON;  
WITH REMARKS  
ON THE HOT WATER BATH TREATMENT  
BY  
ALFRED WILLETT.

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We owe to Mr. Willett's kindness permission to publish this series of cases, which occurred in his wards during our term of office as house-surgeons, 1886-87.

CASE I.

William C., 17, was admitted into Harley Ward, under Mr. Willett, December 15, 1886, suffering from double genu valgum. The patient was a robust, healthy-looking lad, and was employed on a farm in South Wales. When eight years old he had typhoid fever. Soon after recovery he noticed that he was slightly knock-kneed, and the deformity continued to increase up to the time of admission. Two years ago splint treatment for three months with some temporary improvement.

Deviation of right leg,  $3\frac{3}{4}$  inches; of left leg,  $3\frac{1}{4}$  inches.

Patient was kept in bed a fortnight before any operative measures were taken. He gave a good deal of annoyance in the ward, appearing to be of a highly neurotic temperament, and the day before the operation remarked that he should give a great deal of trouble.

December 28.—Heart, lungs, and urine being found healthy, Mr. Willett performed Macewen's operation on both legs. There was nothing in the operation (which was performed in the usual way) to call for remark. The wounds were dressed with iodoform powder, and iodoform and thymol gauze applied.

December 29.—Had a restless night, complains of a great deal of pain. Temperature, morning,  $103^{\circ}$ ; evening,  $102^{\circ}$ . He is very noisy and restless, complains of pain in his back and legs. Sleeps at intervals. Five pounds extension put on.

December 30.—Temperature at night,  $104^{\circ}$ ; felt relief after a smart purge.

December 31.—Temperature still continuing high,  $103^{\circ}$ . Complaining of pain in back. The wounds were looking well, but about  $\frac{3}{4}$  of serum was squeezed out of each. They were dressed under the spray with iodoform and boracic ointment.

January 1.—Temperature,  $99^{\circ}$ , morning; feels easy. The evening temperature, however, went up to  $102^{\circ}$ .

From this date he went on fairly well until the 8th, there being, as a reference to the chart will show, a gradual fall of temperature.

January 8.—Dressed, wounds suppurating pretty freely. Splints taken off; some union between the bones.

From the 8th until the 18th he continued much the same, sleeping and taking nourishment fairly well. The temperature up to the 15th was normal or subnormal in the morning, and  $100^{\circ}$ – $101^{\circ}$  at night. On the evening of the 15th it was  $103^{\circ}$ , morning of the 16th,  $100.2^{\circ}$ .

January 18.—To-day the patient was examined under æther. There was hardly any union in the left leg, and a sinus ran up beneath the femur for about 3 inches. A counter-opening was made and a drainage tube put in. The femur around the fracture was roughened. The union on the right side was good, and there was very little pus. Splints reapplied on left side.

January 24.—The temperature continuing hectic and both wounds suppurating freely, he was again put under ether, and a sinus being found on the under and outer side of the right femur, a counter-opening was made and a drainage tube put in.

January 27.—Swelling all around left knee and fluid in it. The patient remained in much the same condition, very restless, noisy, and troublesome, though not delirious. He always took nourishment well, but occasionally would force himself to vomit. The temperature continued hectic.

The weights were removed on the 10th of February. The right leg continued to do well, but the left, as before, suppurated freely, and the part below the wound became rotated inwards.

On February 12 he was again examined under æther. No new

sinus was found in the left leg, and to overcome the malposition a windowed silicate bandage was applied.

February 23.—Patient has been very troublesome, and will insist on passing his water in the bed, in consequence of which he has developed a bed sore over the sacrum.

February 24.—Silicate taken off. Position improved, but a large abscess found on the outer side of the leg, just below the knee-joint. This was opened, and some  $\bar{z}$ vi. of healthy pus escaped. A long probe passed superficially to the inner side of the ligamentum patellæ, where a counter-opening was made.

The probe also passed from the osteotomy wound down into the popliteal space, where another counter-opening was made, and a tube inserted, as also in the other wound. The cavity of the knee-joint did not communicate with either of these sinuses, though there was some fluid in it.

An interrupted Liston splint was applied to the left leg. After this the patient seemed easier. The left leg still suppurated very freely. He got much weaker, his temperature increasingly hectic, and he had constant vomiting, although he always took nourishment well. The vomiting apparently was intentionally brought about; the administration of bismuth seemed to check it.

The bed sore improved owing to the boy lying alternately on his face and side.

March 9.—The note is as follows:—The boy is very much worse—weaker and more restless. Patella of left knee grates on condyles. No opening into joint discoverable. Drainage tubes taken out. Less discharge. Left ankle œdematous and painful. Sores over ribs, elbows, shoulders, and iliac spine. Bed sore over sacrum better. Continues to wilfully pass his water under him.

The boy continued to get weaker. Bedsores appeared wherever there was the least pressure. The one over the right iliac spine was about four inches long and the bone bare. The left knee-joint was full of fluid and the patella grated, while the suppuration from the wound continued profuse. His temperature was  $104^{\circ}$  to  $105^{\circ}$  at night. He continued very troublesome and restless. No albuminuria.

Mr. Willett advised amputation through the left thigh, but the boy's parents refused.

March 13.—Bath commenced.

To-day the patient was placed in a large bath, long enough for him to lie at full length. He partly floated and was partly supported by two broad flannel bandages, one passing under the buttocks and one under the armpits. An air-collar was put around his neck, and all dressing taken off the wounds.



Fracture boards were placed over the bath, and blankets laid over these and placed round his neck, thus ensuring the maintenance of the heat for some considerable time. The temperature was kept at  $99^{\circ}$  to  $100^{\circ}$ .

The result of this plan of treatment was immediate and permanent improvement. His temperature the first night he was in the bath was only  $100.2^{\circ}$ ; next morning,  $101.6^{\circ}$ , but in the evening,  $99.4^{\circ}$ .

On the 22nd he had a slight rigor, but the temperature only rose to  $100.4^{\circ}$ . All pressure being removed, the sores over the sacrum, ilium, &c., healed rapidly, while the discharge from the wounds in the legs steadily diminished.

His appetite remained good, and he always slept well, though occasionally he would be very troublesome at night, shouting out that he was dying, and being very abusive.

About April 12 he developed slight general bronchitis. The cough troubled him rather, but yielded to expectorants.

On April 14, just one month after the bath was begun, Mr. Willett ordered the patient to sleep in bed during the night, but the bath to be continued by day.

The pressure sore over the sacrum, which a month ago was about four and a half inches by three inches, was now reduced to the size of a half-crown; all the other pressure sores, except the one on the iliac spine, were healed completely, while the osteotomy and other wounds and sinuses in the leg had greatly improved.

April 16.—This morning the left lower first molar came away, together with a large fragment of alveolus. The tooth was carious, and about one month previously the neighbouring bicuspid had been extracted.

April 20.—One-fourth albumen in urine.

April 25.—The next tooth to the one that came away is quite loose and pains him.

May 4.—Cough gone; still some rhonchus in chest. The loose tooth has become firm again. Temperature between  $90^{\circ}$  and  $100^{\circ}$ . Pulse 98; good volume.

May 15.—To-day the bath was left off altogether. The temperature immediately began to fluctuate more, varying between  $97^{\circ}$  and  $98^{\circ}$  in the morning and  $101^{\circ}$  at night.

On the 19th, however, it was only  $100^{\circ}$  at night, and on the 23d  $99^{\circ}$ , where it continued until his discharge.

May 25.—The note is as follows:—Sores over ilium and sacrum nearly healed. The tibia and fibula, together with the lower fragment of the femur, are rotated inwards.

Measurements taken.—From anterior superior spine to internal malleolus—right,  $32\frac{1}{2}$  inches; left,  $31\frac{1}{4}$  inches.

Girth over centre of patella—right, 11 inches ; left,  $12\frac{1}{2}$  inches.

Girth six inches below great trochanter—right,  $10\frac{1}{4}$  inches ; left,  $9\frac{3}{4}$  inches.

The general health is much improved.

June 7.—All the sinuses have closed ; there is only a trace of albumen in the urine. Left leg put up in a silicate bandage.

June 13.—Taken into square ; gaining strength rapidly.

June 22.—No albuminuria ; tries crutches.

June 24.—Went to Swanley.

A few additional facts as to the management of the bath and the boy's condition whilst in it are appended.

He was kept in continuously, except for about half an hour a day while the water was being changed, for one month. A horse-shoe air-cushion tied around his neck allowed him to sleep securely and without any danger of being immersed.

The water was changed and the bath thoroughly cleaned once in the twenty-four hours ; while this was going on he was laid on the bed wrapped in blankets. The action of his bowels generally took place during this time, but if they were open while he was in the bath, he managed to use a bed-pan, so that there was little soiling of the water from this.

Some water was drawn off and replaced by clean hot water about every one and a half hours.

One rather curious fact was that, with the exception of his fingers, toes, and heels, no part of his body presented the sodden, wrinkled appearance so common in the hand and arm after prolonged arm-baths, although, with the exception of his head, he was completely immersed.

The normal growth of hair on the legs and arms was much increased. A brown flocculent deposit always appeared after he had been in the water an hour or two, made up apparently of epithelial debris, discharges from the wounds, and sometimes a small amount of fecal matter.

His medicine during his stay consisted of an occasional purge, quinine and the mineral acids, opium, and while he had bronchitis, ammonia and ipecacuanha.

#### CASE II.—*Acute Periostitis of Left Tibia—Suppurating Chilblain on Right Foot.*

Mary S., aged 8, a weakly-looking, ill-nourished child, was admitted into President Ward, March 22, 1887, under Mr. Willett, suffering from acute periostitis of the left tibia and a suppurating chilblain on the right foot.

The note of her condition on admission is as follows (no past history or history of the present illness could be obtained):—

There is a tender, red, and painful swelling on the front of the left leg, commencing just below the knee, extending downwards to nearly the middle of the leg, and backwards to the posterior surface of the limb. On the dorsum of the right foot was a red painful swelling, about one inch in diameter, extending along the dorsum of the third toe.

The child's friends said she had had a chilblain in this situation ever since the winter.

The child was placed under an anæsthetic and an incision made over the swelling on the tibia; a large amount of pus escaped.

On a probe being put in, it was found to pass downwards and inwards to the back of the leg. Here a counter-opening was made and a drainage tube put in. No bare bone was discovered.

The swelling on the foot was also incised, and pus let out.

The wounds were dressed with iodoform.

The child's temperature on admission was  $102^{\circ}$ .

March 26.—Up to this date she went on well, there being a gradual fall in temperature. After this, however, the child began to go down-hill. The wounds did not discharge much, but the temperature became markedly hectic—normal in the morning as a rule, and  $102^{\circ}$  to  $104^{\circ}$  at night.

April 4.—To-day she was again examined under chloroform, and pus being found at the back of the leg, an opening was made and a drainage tube put in. The tibia was felt to be bare and rough around the old wound on the front of the leg.

The note says:—Patient obviously very ill; is irritable, morose, and listless; becoming very emaciated; takes food badly.

April 7.—On the night of the 7th the temperature was  $103.4^{\circ}$ ; on the morning of the 8th,  $97.4^{\circ}$ .

April 8.—Mr. Willett ordered the patient to be kept in a bath during the daytime, the water to be kept at a temperature of  $99^{\circ}$ . The child slept in bed at night. The bath used was an ordinary hip-bath, in which the patient sat. The water came up about to the level of the last rib. Pressure on the ischial tuberosities was avoided by an air-cushion. A blanket was thrown over the patient, leaving her head exposed, and a board placed across the front of the bath; all dressings removed. Under this treatment the patient improved at once, both locally and generally. The temperature varied between  $97^{\circ}$  and  $99^{\circ}$ , except on the evening of the 9th, when it was at  $100.4^{\circ}$ .

April 14.—The note for this date says:—The patient is much better. She takes all her food, sleeps well, has very little pain in

the leg, and the wounds are healing well. The highest temperature since the bath treatment commenced has been  $100.4^{\circ}$ .

April 21.—This morning the child complained of some pain in the leg. There was some slight swelling between the two incisions, and about  $\frac{3}{4}$  i. of pus was pressed out.

On the 25th the wounds on the leg were almost healed. The child's general condition was very good. She had put on flesh, and was quite happy and contented. The toe, however, gave her some pain when touched. The incision had not healed, and bare bone could be felt with the probe. The metatarso-phalangeal joint grated, but no opening into it could be detected.

This condition cleared up by persevering with the bath; and on May 5th, the wounds being all merely superficial, and the child having no pain, the bath was stopped. On the 18th she went to Swanley convalescent.

October 1.—The child has been seen two or three times since, quite well, both generally and locally.

The medicines she had during her stay in the Hospital were quinine, cod-liver oil, and syrup. ferri phosphatis.

CASE III.—*Acute Periostitis of Right Tibia, followed by Sacro-iliac Disease.*

John K., æt. 12, was admitted to Pitcairn Ward under the care of Mr. Willett on April 25th.

The history was that five days previously he had been seized with sudden sharp pain just below the right knee, to which no cause could be ascribed. Three days later there was swelling and redness of the same part, the pain continuing. At this time also occurred vomiting and rigors.

When brought to the Surgery, the boy had all the appearance of having suffered severely, and looked extremely ill. The right leg was swollen and red from the knee to the middle of the shin, the most prominent point being at the epiphysial line; the whole swelling was exquisitely tender and very elastic. His temperature was  $103^{\circ}$ .

As soon as possible after admission, chloroform was administered and the swelling incised; about four ounces of pus escaped, and bare bone was felt about the region of the epiphysial line. The bleeding from the wound was rather free, so a light plugging of iodoform gauze was inserted, and a dressing of the same material employed. When the influence of the chloroform passed off the pain was found to be considerably less, but there was hardly any improvement in the constitutional symptoms; the temperature



remained high, and throughout the night the patient was frequently delirious and screaming.

April 26.—Wound dressed; not much discharge; swelling and redness somewhat less; but the leg is still so tender that the patient screams at the lightest touch. Temperature remains high; delirium less frequent; screaming very frequent; takes food badly.

April 27.—Has passed a bad night, almost constantly delirious; wound not changed; an abscess opened over each malleolus. Urine, acid; sp. gr. 1027; contains a cloud of albumen.

April 28.—Slept rather more quietly last night; more rational this morning; leg slightly less tender. Temperature 102.4°.

April 29.—Condition of leg slightly improved. Patient much troubled with frequent, short, hacking cough; *alæ nasi* dilate; respirations 40 per minute, and the respiratory movements are chiefly abdominal; moist râles distinctly audible at right apex.

April 30.—Delirium and screaming still frequent; temperature remains high; wounds discharging more freely; the amount of bare bone is somewhat increased.

The boy's condition was so critical and gave so little promise of improvement, that at this time Mr. Willett decided to adopt the plan of treatment by prolonged immersion in the warm bath, which had been found to answer so well in the somewhat similar case of William C., quoted above. The same bath arrangements were made, with the exception that the immersion was only to be continued for twelve hours out of the twenty-four; the patient passing the night in bed. This treatment was strongly resented by the patient; he could not be induced to trust himself on the supporting bandages, and his screams were more frequent than ever. For the first twenty-four hours there was considerable diminution of fever, but at the end of that time it was again as high as before; his cough and appetite improved somewhat, but his constant restlessness and seeming terror were found to increase his exhaustion, and on the 5th of May it was thought advisable to give up the bath treatment.

May 3.—Urine, sp. gr. 1008; no albumen.

May 5.—An abscess opened in the middle of the shin.

May 6.—An abscess opened above the internal malleolus.

May 7.—No pain in the leg, but considerable tenderness; temperature for last forty-eight hours rather lower; not much change in general health, rather weaker on the whole; still frequently delirious; eats the first few mouthfuls of his food ravenously, but refuses the rest.

May 9.—Looks worse; pulse 120, very soft and small; evening temperature 105.4°.

May 10.—Screamed almost continuously throughout the night; complains of great pain all over the left hip. Temperature, A.M. 102.4°, P.M. 104.5°. Examination of the lungs to-day shows in front fair percussion-note; air entry slightly restricted; crepitant râles at both apices; behind, percussion-note somewhat impaired, more so on the left side; bronchial breathing and increased vocal vibrations at the angle of left scapula; crepitant râles universal.

May 11.—Condition rather worse; delirious almost all the time; thirst constant; tongue dry and brown; sordes on upper lip. Erythematous patches have appeared over the internal condyle, the internal malleolus, the scaphoid, and the ball of the great-toe.

Urine, sp. gr. 1010; no albumen.

May 13.—There is a tender fluctuating swelling of the size of a hen's egg over the posterior inferior spine of the left ilium; the skin over it is natural.

May 14.—Exhaustion increasing; micturition often involuntary.

May 16.—Chloroform administered and the iliac swelling incised. Pus was found in considerable quantity below the deep fascia. On passing a probe into the abscess cavity, it was felt to pass between two rough bony surfaces, apparently into the sacro-iliac joint, and on passing the finger into the rectum, "boggy fulness" was found at the corresponding point.

The free drainage of this abscess was followed by a slight improvement in the boy's condition; the temperature was steadier for a few days; he took his food rather better, and began to look brighter. On the 18th there was considerable intolerance of light.

May 21.—Temperature again becoming more irregular, and the anxious restlessness and screaming, which had lessened, returned almost as markedly as before.

May 22.—Painful red swelling over lower end of the tibia; purulent discharge from the left ear.

May 24.—Abscess opened above the ankle; irritability increasing.

May 25.—Urine, sp. gr. 1011; faint cloud of albumen. Pulse 138, very soft.

The patient's condition was now so critical that Mr. Willett decided to again make a trial of the bath treatment, in spite of its failure previously. Accordingly, for a few hours on the afternoon of the 25th, he was immersed. This time, though still extremely troublesome, and apparently wilfully so, he had not the same amount of terror as before. As in the previous trial, he was removed from the bath at bedtime. The first night his temperature rose as usual, but the following day showed the com-

menacement of a marked improvement in the chart. For nearly four days the temperature remained below  $100^{\circ}$ ; subsequently it again became somewhat hectic, but throughout the whole period of daily immersion—forty-six days—it never approached its previous character, and only on three occasions reached  $102^{\circ}$ .

May 28.—For the first time since admission there was no complaint of pain.

May 31.—Some retained pus was allowed to escape by probing the old wounds at the lower end of the tibia; bare bone was felt at the bottom of each sinus.

June 3.—An incision made to relieve pus in the back of the leg; tendo Achillis found to be bathed in pus.

The general health was now somewhat improved; he was taking food and sleeping better; but his temper and disposition were becoming worse daily. He would wilfully keep the other patients awake all night, and became so troublesome, that on the 5th it was found necessary to transfer him to one of the strong rooms. The removal was followed by a sudden fall of temperature to  $97.6^{\circ}$ , and had a marked effect on his temper; he became very sullen, and would hardly speak or touch food for some days.

June 18.—Gets paler and thinner every day in spite of eating ravenously.

After this date a very gradual improvement took place. About July 10th an obstinate diarrhœa set in, which necessitated his removal from the bath on the 12th. A marked change in the temperature chart is noticeable at once; the difference between the morning and evening temperature becoming much increased.

During the forty-six days of his immersion no fewer than eight abscesses on the legs and buttocks were opened. These were apparently old hæmatomata (due to the pressure of the supporting bandages), which, in consequence of his condition, had undergone suppuration.

Although his temperature was thus changed after removal from the bath, his general health did not seem to become correspondingly worse. The discharge from the leg-wounds was distinctly less, and the wounds themselves were healing. The sacro-iliac disease continued, though in a much quieter state. The diarrhœa continued in spite of remedies, and on the 18th of July it is noted that the motions contained pus. Two days later pus was passed alone, and in large quantity. The rectum was examined while the patient was under chloroform, but no communication with the sacro-iliac disease could be found.

August 27.—Discharge of pus by the bowel has ceased; diarrhœa much less. Urine normal.

September 2.—The diarrhœa has ceased.

After this date the improvement from week to week was much more noticeable.

September 28.—Boy looks better and has gained flesh; has sat up to tea the last few days. The temperature is steadier, and more nearly at the normal level. The original opening of the sacro-iliac disease is now closed, and there is a continuous but slight discharge from a sinus over the coccyx, which apparently leads into the synchondrosis.

October 5.—Condition of the leg much quieter. Strength increasing; has tried to walk on crutches. Urine, sp. gr. 1015; contains a cloud of albumen.

October 20.—Condition improved; temperature nearly normal. The six sinuses over the tibia leading to bare bone are still open; the sequestrum does not appear to be loose; there is considerable deposit of new bone.

The improvement in his disposition is almost more marked than that of his body.

October 25.—The operation of sequestrotomy was performed; a large portion of the tibia was removed piecemeal, the largest piece being removed from the region of the upper epiphysis. At the conclusion of the operation no bare bone could be felt.

A week later it is noted that the operation has been followed by no bad symptoms, and that the coccygeal sinus is discharging but very slightly.

The notes of this case must fail to fully give the reader an impression of this boy's desperate condition at the time when the second period of bath treatment was determined upon; but those who watched the case both before and after that time are convinced that the bath saved his life.

This case does not show in quite so sudden and marked a way as the other two cases the beneficial effect of the continuous bath in cases of prolonged suppuration, but even here its influence was obvious. It is our earnest hope that the record of these three cases may help somewhat to bring into general practice a mode of treatment, both simple and efficacious, for a class of cases that too often defies all our care.

For the able notes of these cases we are indebted to Messrs. Spencer and Weber (Case I.), Olive and Naylor (Case II.), and Giffard, Heaton, Edelstein, and Pierce (Case III.), who were the dressers in charge successively, and we offer these gentlemen our thanks for minimising our labour in the publication of the cases.



REMARKS BY MR. WILLETT ON THE CASES REPORTED BY  
MESSRS. CHOLMELEY AND DAVIDSON.

I have a firm conviction that the employment of the "hot water bath" treatment affords a prospect of successfully combating a class of surgical cases which have hitherto but too often baffled the surgeon; I mean such cases as are generically termed "surgical hectic," of which those reported by my house-surgeons, Mr. Cholmeley and Mr. Davidson, may be taken as good illustrations. No doubt many a case of "surgical hectic," due to suppuration in connection with disease of a joint or with necrosis of a long bone, is, when the patient has been reduced to a state that forbids any expectation of spontaneous recovery, saved by the removal of the limb. But there are numerous instances where this severe, if necessary, treatment cannot be practised. Such, for example, as pelvic suppurations, whether dependent upon bone-disease or other causes, and aggravated cases of empyæma, in all of which the "down-hill" progress of the patient, do what we may, is but too often continuous, and the end well-nigh certain; for profuse suppuration induces first hectic and wasting, and later some one or other of the amyloid visceral degenerations, until at length the patient, being reduced veritably to "skin and bones," succumbs. Well, then, if possible, long before this final train of symptoms appears, and however hopeless the case may seem—and no case could seem more utterly hopeless than that of William C.,—I urge the employment of the "hot water bath;" and besides, if brought into use in the early stages of joint or bone diseases, as in the cases of Mary S. and John K., it may save many a limb, that would otherwise drift on until amputation was imperative to save life.

Much, no doubt, has been gained in the treatment of wounds of all sorts by the advances in antiseptics, in the use of deodorisers, and by drainage, which exert a powerful influence in warding off the advent, or in arresting the progress, of surgical hectic. Nevertheless, in many cases, neither is its onset or its progress affected by the rigorous use of antiseptics—a result which is due, I suppose, to the causation of the sepsis lying so deeply, or to the feeble resisting powers of the patient.

I was induced to adopt the bath treatment in the first case (that of William C.) for two reasons: the one, that everything that had been done had failed to arrest his progress towards death—in truth, I regarded him practically as doomed—so as a *dernier ressort* he was placed in the bath; the other, from the fact that his previous sores passed so rapidly into a phagedænic state, which

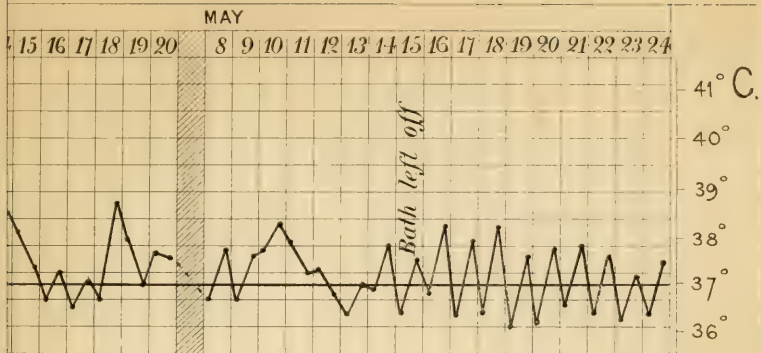
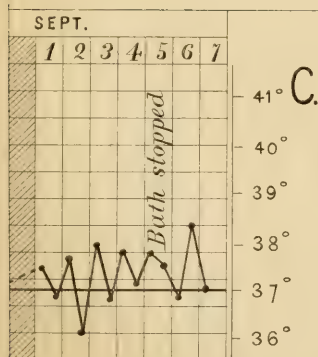
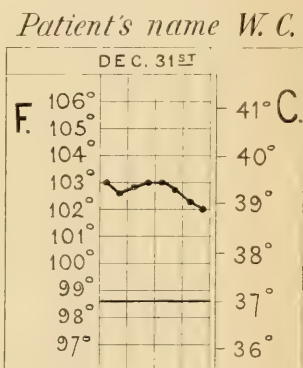
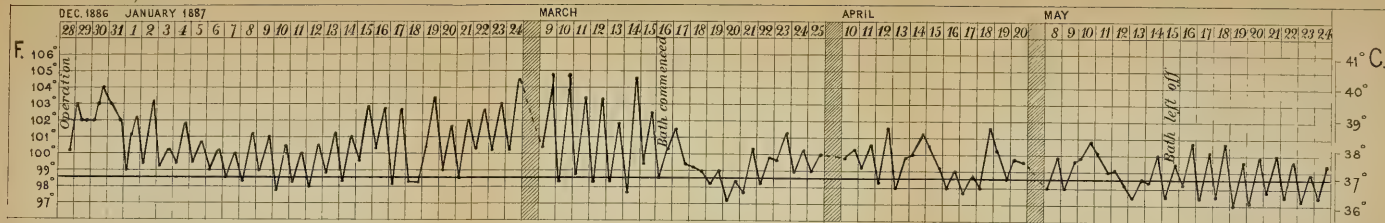


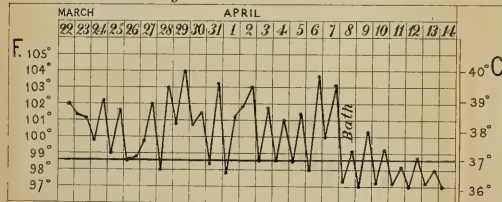
Chart showing the range of the temperature during 12 hours taken from 9 a.m. on Dec. 31<sup>st</sup>.



Patient's name, *William C.*



Patient's name, *Mary S.*



Patient's name *W. C.*

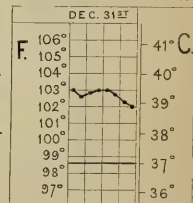
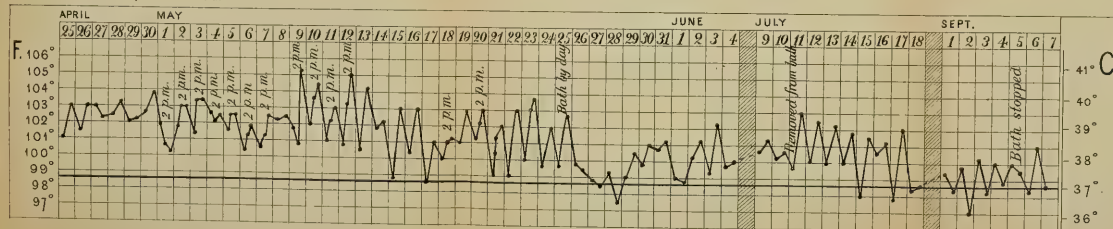


Chart showing the range of the temperature during 12 hours taken from 9 a.m. on Dec. 31<sup>st</sup>.

Patient's name, *John K.*



brought to mind the good effect of baths in the phagedænic sores of tertiary syphilis.

With regard to the rationale of the treatment, whilst there are many minor points, such as the constant, even temperature of the water, the soothing influence of the moisture, the avoidance of all pressure, and the absence of the pain and irritation of dressing wounds, I cannot but think the important factor lies in the constant irrigation of all the suppurating parts. Reaching, as water will of course do, to the deepest as well as the most intricate sinus, this brings about a constantly increasing dilution of the septic discharges, until they cease to be septic; probably, too, the water exercises a tonic or stimulating effect upon the abscess-membrane, for the change in the aspect of all sores is one of the earliest indications of improvement; this is followed by steadying of the previously fluctuating temperature; the patient becomes brighter and more animated; then filling out of the cheeks tells that nutrition is improving; in short, all the signs of returning health are manifested.

The routine management of the bath is so fully described by Mr. Cholmeley (p. 259) that it leaves me nothing to add to it.

Novelty in the employment of a hot-water bath is, of course, not claimed, the object aimed at in the report of these cases is to draw attention to an extension of its utility to a class of surgical affections which, in many instances, are not amenable to ordinary, or even to antiseptic treatment.





AN EXAMINATION  
OF NEARLY  
SEVEN HUNDRED CASES OF ACUTE  
RHEUMATISM,

CHIEFLY WITH A VIEW TO DETERMINING THE FREQUENCY  
OF CARDIAC AFFECTIONS, AND ESPECIALLY,  
PERICARDITIS, AT THE PRESENT TIME.

BY  
W. S. CHURCH, M.D.

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I HAVE for some years had the impression that acute rheumatism, as we meet with it now in hospital practice, is less severe and less frequently accompanied by pericarditis than it was twenty years ago. The recurrence of pneumonia and other acute pulmonary complications also appeared to me to be more rarely met with than formerly, and it was with the view of satisfying myself on these points that I commenced the analysis which forms the basis of this paper. As my work proceeded, it seemed to me that a more complete statistical report of the cases than I had at first intended to make might be worth publication in these Reports, especially as the results arrived at do not entirely correspond with the statements usually met with in standard works on medicine.

Statistics are proverbially fallacious, and in nothing are they a less trustworthy guide than in the treatment of disease: as helping us to form a correct estimate of the varieties, complications, and dangers of any special disease, they are of much greater value.

A statistical paper must, I fear, to most readers prove uninteresting, especially when it deals with so common a subject as rheumatism. At the same time it is in common diseases, which hospital physicians have to treat in large numbers, that we may hope to arrive at exact results from carefully collected statistics.

In the case of rheumatism we have numerous statistical tables drawn up by physicians of experience with which my figures can be compared, and those of my readers who have the patience to follow me through my figures can judge for themselves of their value.

For the purpose of analysis I have made use of all the cases of acute rheumatism of which I had notes that had been under my care in the Hospital up to commencement of the current year. They number 560—a sufficiently large number to prevent any serious error occurring from accidental causes, such as a run of mild cases or the reverse. To be quite sure that my own cases gave a fair representation of those met with in the Hospital, I analysed the cases treated by my colleagues in one year, amounting to 133.<sup>1</sup> I found that the results yielded by an analysis of their cases were so similar to those obtained from my own, that I think my statistics may be taken as fairly representing the disease as seen in the wards of St. Bartholomew's Hospital.

There is one very serious difficulty which constantly occurs in comparing the statistics of rheumatism given by different observers. The older authorities divide rheumatism into acute, subacute, and chronic; the last of these three divisions is a fairly well-defined one, but what meaning are we to attach to the terms acute and subacute? The old definition, "*Rubor et tumor cum calore et dolore*," is not precise enough, and we do not know if the various observers were really dealing with similar conditions. In classifying my own cases, I found very great difficulty in determining where to draw the line between those cases which might be called acute cases or rheumatic fever, and those belonging to the chronic group. After much consideration, I came to the conclusion to include as acute rheumatism or rheumatic fever all in which the temperature on or within twenty-four hours of admission reached or exceeded  $100^{\circ}$ .<sup>2</sup> This may seem to many placing the limit very low; but I found that no inconsiderable number of cases of first attacks with affection of the endocardium, or at all events with altered heart-sounds, did not have a temperature exceeding  $101^{\circ}$  during their stay in the Hospital.

I have also excluded from these statistics all cases of gonorrhoeal rheumatism, and, so far as I could, of chronic rheumatic arthritis, although in both of these divisions temperatures exceeding  $100^{\circ}$  were frequently met with.

In comparing my percentages of cardiac affection in rheumatism with that given by other authorities, it must therefore be borne in mind that I have included all whose temperatures exceeding

<sup>1</sup> This number does not include the female patients treated by Sir Dyce Duckworth in the year.

<sup>2</sup> For the actual temperature of the patients when admitted, *vide* p. 283.

100° degrees on admission, and made that degree of pyrexia my standard, without taking into consideration the number of joints affected or the severity of the joint pains. The standard is a purely arbitrary one; but, for the reason given above, I believe it to be much more accurate, and more likely to lead to true conclusions with regard to the frequency of cardiac disease in rheumatism, than by classifying the cases on the old plan of acute and subacute.

It is also necessary for me to explain the meaning of the heading "heart affected." My notes were not complete enough to enable me to break up the cases in which there was disease of the heart into divisions according to the probable cause of the endocardial murmurs stated to have been present. Consequently, every case in which there was a persistent abnormal sound, whether exo- or endocardial, accompanying the heart-sounds, is included under the head of "heart affected;" but those in which a murmur was only temporary have been excluded. Under the treatment of rheumatism by salicylate of soda it is very common to meet with temporary and varying murmurs accompanying the systole, and heard most frequently in the area of the pulmonary valves. It will also be seen that in 107 of my cases the condition of the heart is put down as not stated. I have consequently given the percentage of cases having the heart affected in two contiguous columns, the first representing the percentage taking the whole of the cases, *i.e.*, including those in which the condition is not stated as if in these the heart was not affected; and a second column giving the percentage of heart affection in those in which the condition of the heart was definitely stated. I must also explain what is meant by the heading "condition of the heart not stated." In 49 only of the 107 was there no mention of the sounds of the heart in the notes; in the remaining 58 the notes were imperfect, and the condition of the sounds of the heart towards the end of the patient's stay in hospital, and at the time of his discharge, was not recorded with sufficient precision to justify me in placing the cases under the heading of "heart affected or not affected." An examination of the figures will show that in first and second attacks of rheumatism a fraction over 13 per cent. was not fully recorded, and 10 per cent. in third or subsequent attacks, and 22½ per cent. in cases in which the number of the attacks also was not stated. I believe that one would not be far from the truth in considering that two-thirds of those in which the condition of the heart is not stated had no abnormal sounds, and one-third had.

Tables I. and II show the number of patients, male and female, at each decade of life up to fifty; so few cases are met with after fifty that it was unnecessary to divide them. Table III. shows



the whole of the cases, male and female, thrown together. It will be seen that the numbers of the female slightly exceed that of the male patients. This arises from my having been in charge during more than half of the years tabulated of a larger number of female than male beds. I find by turning to the Hospital statistics that a larger number of male than female cases were admitted; and this agrees with the statement generally made by writers that rheumatic fever is commoner in men than women.

TABLE I.—MALE PATIENTS.

*Showing the Condition of the Heart at the various Decades of Life in Male Patients.*

!Age.	No. of Cases.	Heart Affected.	Heart not Affected.	Condition of Heart doubtful.	Condition of Heart not stated.	Percentage of Heart Affected of all Cases.	Percentage of Heart Affected in Cases in which full notes were taken.
Under 10	11	9*	1	...	1	81.09	90
" 20	120	83†	20	3	14	64.020	78.032
" 30	106	55*	32	4	15	51.094	60.40
" 40	70	23	29*	4	14	32.60	41.04
" 50	20	5	9	...	6	25	35.10
Over 50	2	...	1	...	1	...	...
Age not stated	6	3	2	1	...	50	50
	335	178	94	12	51	53.045	62.192

\* One fatal case.

† Three fatal cases.

TABLE II.—FEMALE PATIENTS.

*Showing the Condition of the Heart at the various Decades of Life in Female Patients.*

Age.	No. of Cases.	Heart Affected.	Heart not Affected.	Condition of Heart not stated.	Percentage of Heart Affected in all the Cases.	Percentage of Heart Affected in Cases in which full notes were taken.
10	14	11	3	...	78.08	78.08
20	124	87†	27	10	70.020	76.036
30	135	69	42	24	51.015	62.018
40	45	12	21*	12	26.30	33.11
50	21	4	9	8	19.01	30.10
Over 50	15	7	6	2	46.10	53.11
Age not stated }	4	3	1	...	75.1	75
Totals . .	358	193	109	56	53.326	63.274

\* One fatal case.

† Two fatal cases.

TABLE III.

*Showing Percentage of Heart Affection at each Decade of Life in both Male and Female Patients in Rheumatic Fever.*

Age.	No. of Cases.	Heart Affected.	Heart not Affected.	Condition of Heart doubtful.	Condition of Heart not stated.	Percentage of Heart Affection.	Percentage of Heart Affection in Cases fully noted.
Under 10	25	20	4	...	1	80	83.08
" 20	244	170	47	3	24	69.164	77.060
" 30	241	124	74	4	39	51.109	61.078
" 40	115	35	50	4	26	30.050	39.29
" 50	41	9	18	...	14	21.39	33.09
Over 50	17	7	7	...	3	41.03	50
Age not stated.	10	6	3	1	...	60	60
	693	371	203	12	107	53.371	63.182

These tables illustrate the general accuracy of the statements made with regard to rheumatic fever, its rarity in children, its prevalence in the second and third decades of life, and its decline during the fourth decade.

It is to be noted that not only is the percentage of heart affection almost exactly the same in males and females, but that the percentage of heart affection in the two sexes at each decade very closely corresponds.

My results agree closely with those given by Dr. Pye Smith,<sup>1</sup> who says, "In rather more than half of the whole number (*i.e.* 400) some cardiac murmur was heard while the patient was under observation." They also agree with the percentages given by Dr. Francis Sibson in his very elaborate analysis of rheumatic fever given in his article on pericarditis.<sup>2</sup> Leaving out his cases of "threatened or probable endocarditis," he found that in 326 cases treated in his wards, 52.148 had some heart affection, or including those in which endocarditis was "threatened or probable," 75.250. The comparatively large number of cases—76 in 326—placed by Dr. Sibson under the head of "threatened or doubtful endocarditis," renders it difficult to compare his numbers with mine. He gives, however, a slightly smaller number as escaping altogether (24.076 per cent.) than my figures do, as in my cases the percentage of cases escaping all cardiac complication is as high as 29.203. Dr. Barclay gives 44.0 per cent. as the number with cardiac complications in

<sup>1</sup> Guy's Hospital Reports, Third Series, vol. xix. p. 322.

<sup>2</sup> Reynolds' "System of Medicine," vol. iv. p. 187.

his 152 cases of acute, and 11.2 per cent. in his 178 cases of subacute, and 3.9 in 316 cases of chronic rheumatism.<sup>1</sup>

One result that I was unprepared for is to be noticed. The percentage of cases between twenty and thirty with heart affection is less in men than in the preceding decade, and can only be explained by the fact shown in Table VII., that many more men attacked between twenty and thirty escape heart complications than of those attacked between ten and twenty; whilst in women the proportion remains nearly the same (Table VIII.).

TABLE IV.—MALE PATIENTS.

*Showing the Condition of the Heart in the various attacks.*

No. of Attacks.	No. of Cases.	Heart Affected.	Heart not Affected.	Condition of Heart doubtful.	Condition of Heart not stated.	Percentage of Heart Affection in all the Cases.	Percentage of Heart Affection in Cases in which the Condition of the Heart is noted.
First attack . .	100	47	35	2	16	47	55.80
Second attack .	94	59	23	3	9	62.80	69.36
Third or subsequent attack .	60	36	14	5	5	60	65.25
Number of attack not stated . . .	81	36	22	2	21	44.36	60
Total .	335	178	94	12	51	53.045	62.192

TABLE V.—FEMALE PATIENTS.

*Showing the Condition of the Heart in the various attacks.*

No. of Attacks.	No. of Cases.	Heart Affected.	Heart not Affected.	Condition of Heart not stated.	Percentage of Heart Affection in all the Cases.	Percentage of Heart Affection in Cases in which the Condition of the Heart is noted.
First attack . . . .	90	47	34	9	52.20	58.02
Second attack. . . .	89	61	14	14	58.48	81.25
Third or subsequent attack . . . . .	40	26	9	5	65	74.10
Number of attack not stated . . . . .	139	59	52	28	42.062	53.017
Total . . .	358	193	109	56	53.326	63.274

<sup>1</sup> Statistical Report upon Cases of Disease of the Heart occurring in St. George's Hospital, especially in relation to Rheumatism and Albuminuria. 1852.

TABLE VI.

*Showing the Condition of the Heart in the various attacks in Male and Female Patients put together.*

No. of Attacks.	No. of Cases.	Heart Affected.	Heart not Affected.	Doubtful.	Condition of Heart not stated.	Percentage of Heart Affection in all Cases.	Percentage of Heart Affection in the Cases in which the condition of the Heart is noted.
First attack . .	190	94	69	2	25	49.090	56.160
Second attack .	183	120	37	3	23	65.005	75
Third or subsequent attack .	100	62	23	5	10	62	68.80
No. of attack not stated . . . .	220	95	74	2	49	43.040	55.100

An examination of these tables shows that while upwards of 40 per cent. of my patients escaped heart complication in their first attack, only a fraction over 30 per cent. were found free from heart mischief in second attacks. I was much surprised to find that the percentage of heart affections in third or subsequent attacks was lower both in men and women than in second attacks, and it is difficult to explain. I believe that several causes are concerned in reducing the percentage of heart affection in third or subsequent attacks, of which the two following are probably the principal:—

(1.) The cases of rheumatism which have no tendency to heart affection, but which have numerous attacks, bear a larger proportion to the whole number of third attacks than they do to the whole number of first or second attacks.

(2.) Notwithstanding my care, a few cases of gout and chronic rheumatism which happened to have an elevated temperature at the time of admission may be included, and may count as patients with a third or subsequent attack.



TABLE VII.—MALE PATIENTS.

*Showing the Age at which the First Attack occurred and the Condition of the Heart at the End of the Attack.*

Age.	No. of Cases.	Heart Affected.	Heart not Affected.	Condition of Heart doubtful.	Condition of Heart not stated.	Percentage of Heart Affection including all the Cases.	Percentage of Heart Affection in Cases in which the Condition of the Heart is noted.
Under 10	4	3	1	...	...	75	75
" 20	46	28	10	2	6	60.40	70
" 30	31	12	16	...	3	38.22	42.80
" 40	16	3	8	...	5	18.12	27.03
" 50	3	1	...	...	2	33.1	...
Over 50	...	...	...	...	...	...	...
Age not stated	...	...	...	...	...	...	...
	100	47	35	2	16	47	55.80

TABLE VIII.—FEMALE PATIENTS.

*Showing the Age at which the First Attack occurred, and the Condition of the Heart at the End of the Attack.*

Age.	Total Number, First Attack.	Heart Affected.	Heart not Affected.	Condition of Heart not stated.	Percentage of Heart Affection, including all the Cases.	Percentage of Heart Affection in the Cases in which the Condition of the Heart is noted.
Under 10	5	2	3	...	40	40
" 20	31	18	10	3	58.02	64.08
" 30	36	22	12	24	61.04	64.24
" 40	12	4	7	1	33.04	36.04
" 50	3	...	1	2	...	...
Over 50	2	...	1	1	...	...
Age not stated	1	1	...	...	...	...
	90	47	34	9	52.20	58.02

TABLE IX.<sup>1</sup>

*Showing the Age at which the First Attack occurred, and the Condition of the Heart at the End of the Attack.*

Age.	No. of Cases.	Heart Affected.	Heart not Affected.	Condition of Heart doubtful.	Condition of Heart not stated.	Percentage of Heart affection, including all the cases.	Percentage of Heart affection in the cases fully noted.
Under 10	9	5	4	...	...	55.05	55.05
" 20	77	46	20	2	9	59.57	67.44
" 30	67	34	28	...	5	50.50	54.52
" 40	28	7	15	...	6	25	31.18
" 50	6	1	1	...	4	16.4	50
	187	93	68	2	24	49.137	57.009

Three cases, two over fifty, and one age not stated, are not tabulated. The one age not stated had the heart affected.

It will be seen from these tables that nearly one-fourth (3.132) of the cases treated were first attacks. They yield the following percentage at the various decades of life:—

Under 10	.	.	4.172 per cent.	7
" 20	.	.	41.033	"
" 30	.	.	35.155	"
" 40	.	.	14.182	"
" 50	.	.	3.039	"

These figures differ somewhat from Dr. Pye Smith's, chiefly in the larger proportion of first attacks met with between twenty and thirty and thirty and forty. It is to be remembered that his statistics of first attacks are not those of first attacks under his own observation, but tabulated from the statements of the patients; his numbers, too, are much larger, embracing 365 to my 187.

In my cases of first attacks, more than half had some affection of the heart; the percentage being rather higher among the women than the men. The evidence of heart affection at the various ages is noteworthy; in children under ten, boys suffered more than girls, but the numbers are so few that I do not consider the results trustworthy; they give a lower percentage of heart affection than is usually stated, and I believe 75 per cent. is nearer the truth than the numbers yielded by my figures. The youngest patient, aged five, had heart mischief; the next in age, six months older, escaped. During the second decade the liability to cardiac mis-

chief appears to be almost the same in the two sexes, but in the succeeding decade the women suffer much more severely than the men. A possible explanation may be, that it is the period of life in which the greatest strain is thrown on women. Many of our patients are general servants or women engaged in more or less laborious employments, and not a few are weakened by child-bearing and lactation.

Dr. Barclay,<sup>1</sup> in 88 instances of first attacks, of which 38 occurred in male and 50 in female patients, gives a very much lower percentage than is yielded by my figures, namely, 39.5 per cent. for the men, and 40 per cent. for the women.

TABLE X.

*Showing the Age and Number of the Attack in which Pericarditis occurred.*

	Age.			First Attacks.			Second Attacks.			Third or Subsequent Attacks.			No. of Attacks not stated.			Percentage of Pericarditis in Total Number.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
Under																		
10	5	1	6†	2	...	2	2	...	2	1*	...	1	...	1*	1	45.05	7.02	24
20	18	8	26§	7	4	11	3	2	5	1	1¶	2	7‡	1	8	15.00	6.056	10.200
30	17	12	29†	7	3	10	4	5	9	4*	1*	5	2	3	5	16.004	8.120	12.008
40	8	2	10	1	...	1	2	1	3	3	...	3	2	1	3	11.30	4.20	8.080
Over 40	2	3	5	1	...	1	1	...	1	2	2	...	1	1		9.02	8.12	8.36
	50	26	76	18	7	25	12	8	20	9	4	13	11	7	18	14.230	7.234	10.670

\* One fatal case.

† Two fatal cases.

‡ Three fatal cases.

§ Three fatal cases.

|| Aged 52, 54, 55.

¶ A sixth attack of rheumatism.

There was also one doubtful case of pericarditis occurring in a first attack in a woman under 30.

A glance at the above table shows that in my cases pericarditis was met with in 50 male and 26 female patients, giving for the whole a percentage of 10.670, or nearly 11 per cent.,—a much smaller number than that given by Dr. Sibson,<sup>2</sup> whose 326 cases yield a percentage of 19.106. Dr. Pye Smith<sup>3</sup> also gives a higher percentage, being 17½ in his 400 cases. I have already stated (p. 273) that Dr. Sibson's percentage of cases with cardiac complications is almost the same as mine, so that we may conclude that his cases did not differ much, if at all, in severity from mine; yet my cases yield little more than half as many instances of pericarditis.

It will be seen that if we except children under ten years of

<sup>1</sup> *Loc. cit.*, p. 18.

<sup>2</sup> *Loc. cit.*, p. 187.

<sup>3</sup> *Loc. cit.*, p. 323.

age, 24 per cent. of whom suffered from pericarditis, the percentage for the two succeeding decades is almost the same, although the higher figure is for the third decade, whilst in cardiac affection of all sorts the highest figure was furnished (Table III.) by the second decade of life. Between the ages of twenty and thirty two men have pericarditis for every woman. In the five instances in which pericarditis occurred in persons over forty, three were women and two men, but even at this age the percentage of attacks was one higher in men.

It is quite useless to compare the figures given by most of the earlier writers on rheumatic pericarditis with these, as pyæmia was not distinguished by them from acute rheumatism, and falsifies their results. In Bouilland's well-known *Traité clinique du Rhumatisme articulaire*,<sup>1</sup> probably the whole of the cases, twenty-two in number, given in illustration "du rhumatisme articulaire ou musculaire bien caractérisé" were not cases of rheumatism at all, but of pyæmia; and it is not until we get to his second article, treating "de rhumatisme articulaire aigu," that he is dealing with cases comparable to those we are now considering. Yet both in his treatise above mentioned, and at an earlier date in his *Nouvelles recherches sur le rhumatisme articulaire aigu*, published in 1836, and in his *Traité clinique des maladies du cœur* in 1835, p. 275, he draws special attention to the connection between acute rheumatism and disease of the endo- and peri-cardium. In the *Nouvelles recherches* he formulates the following law: "Dans le grande majorité des cas de rhumatisme articulaire généralisé, febrile, il existe à un degré variable un rhumatisme du tissu séro-fibreux du cœur. Cette coïncidence est donc la règle et la non-coïncidence l'exception"—a law which I am afraid the experience of physicians since his time has proved to be much more nearly accurate than his cotemporaries would allow.

Dr. Southey's figures, given in his interesting paper,<sup>2</sup> show a percentage for pericarditis (14.038 in 133 cases) intermediate between mine and Dr. Sibson's, but it must be remembered that he was dealing with a, comparatively speaking, small number of cases. I will only refer to one more list of published cases, the earliest observations on the connection between rheumatism and heart affection collected for publication in our Hospital, and recorded by Dr. Latham in his lectures on the heart.<sup>3</sup> I have arranged his cases in a tabular form for easy comparison with my own:—

<sup>1</sup> Paris, 1840.

<sup>2</sup> Observations on Acute Rheumatism, Hospital Reports, vol. xiv. p. 1.

<sup>3</sup> Vide Latham's Collected Works, Syden. Soc., 1876, vol. i. p. 86.



TABLE XI.

*Dr. P. M. Latham's Cases of Acute Rheumatism in St. Bartholomew's Hospital for the years 1836-1840 inclusive.*

	No. of Cases.	Heart Affected.	Heart not Affected.	Per-centage.	Peri-carditis.	Per-centage.
Men . . . . .	75	47	28	62.50	10	13.25
Women . . . . .	61	43	18	70.30	8	13.07
Total . . . . .	136	90	46	66.24	18	13.32

Of the eighteen cases of pericarditis three died, and one case was fatal which had no heart affection.

It will be seen that Dr. Latham's percentage is a little higher than mine for "heart affection," and rather more so for pericarditis, but his figures so closely agree with mine, that I must admit they do not give much countenance to my belief that pericarditis is less frequent than formerly—a belief which is fully borne out by the other statistics quoted. I shall have to refer to Dr. Latham's cases again farther on.

*Mortality.*—Out of the 693 cases under consideration, ten died, giving a mortality of 1.307 per cent.; seven died with pericarditis and pulmonary complications, one of hyperpyrexia, one with endocarditis and pleurisy with effusion, and in one the cause of death was obscure. In Dr. Pye Smith's cases death recurred eighteen times, but in three the fatal result may be termed accidental, leaving a mortality of fifteen, or  $3\frac{3}{4}$  per cent. Ten of the fifteen died with pericarditis, which was in nine instances attended with pneumonia or pleurisy or both.

The severity and fatality as well as the frequency of pericarditis in acute rheumatism in childhood is markedly shown by Table X. Twenty-four per cent. of the children under ten had pericarditis, and two, out of the six affected, died; whereas in the second decade of life, out of twenty-six affected with pericarditis only three died, and of the patients over twenty only two out of forty-four who had pericarditis. Dr. Sibson found that under the age of twenty-one males and females suffered almost equally from pericarditis, above that age men suffered three times more frequently than women. It is curious, and illustrates well the danger of drawing conclusions from statistics, that my figures lead one to an opposite result, the proportionate numbers of the sexes affected differing less between twenty and thirty than in the preceding decade.

Very few of my patients, excepting those who had pericarditis, suffered from severe pulmonary complications. Among the men I find that eight had pleurisy, one with effusion requiring paracentesis thoracis, and three severe bronchitis; whilst among the women there were two cases of pneumonia and one of severe bronchitis. I wish to draw particular attention to this, as it presents a very great contrast to Dr. Latham's statistics, who found twelve instances of severe pulmonary disease in 109 cases of rheumatism without pericarditis, and in eighteen cases with pericarditis the lungs were seriously implicated in twelve. This difference, which I shall again refer to, is too large to be accidental.

Of the seven fatal cases of pericarditis, five occurred in males and two in females. Among the males, the youngest was aged 9; he died on the third day after admission in his third attack, having endocarditis and pleurisy as well. The next youngest was aged 12, and died on the fourth day after admission, having also chorea and pleurisy; the number of his attack is not stated. The third, aged 13, died on the eighth day from admission, with pleurisy and much effusion. The notes do not mention the number of the attack. The fourth was somewhat older, 19, and died on the day of admission, with pneumonia and endocarditis as well. The fifth case was an adult, 26 years of age, who had had three previous attacks of rheumatic fever, and died on the nineteenth day from admission. The two fatal female cases occurred, one aged 28, in a fifth attack, with pneumonia, on the eleventh day from admission; the other in a child of 10, in probably a first attack, pneumonia and much pericardial effusion being present.

*Relapses.*—The tendency of acute rheumatism to relapse, as shown by my cases, is less than I expected, but I must in the first place give a definition of what I have called a relapse. I have adopted the same standard for the relapse as for the initial fever, and have not reckoned any case which did not manifest a rise of temperature reaching  $100^{\circ}$  with some fresh joint pains, as a relapse, although I of course admit that, in the course of an attack of acute rheumatism after the initial fever with pain and swelling of the joints has passed away, you frequently meet with recurrence of pain, and somewhat less frequently some swelling of the joints, without the temperature reaching  $100^{\circ}$ . To obtain trustworthy statistics you must have a fixed point to start from, and deal only with cases which are fairly comparable.

Complete temperature charts were not kept in my earlier cases, the figures given as to the relapses consequently refer to nearly 200 fewer cases, and yield 19.057 as the percentage of relapses.

TABLE XII.

*Showing the Number of Relapses, and the Age at which, and the Attack in which, they occurred.*

	First Attack.			Second Attack.			Third or subsequent Attack.			Attack not stated.					
	M.	F.	Tl.	M.	F.	Tl.	M.	F.	Tl.	M.	F.	Tl.	M.	F.	Tl.
<i>One relapse.</i>															
Under 10	2	...	2	1	...	1	...	...	...	...	...	...	3	...	3
" 20	4	2	6	2	5	7	2	3	5	1	3	4	9	13	22
" 30	3	3	6	3	3	6	2	...	2	2	2	4	10	8	18
" 40	4	...	4	4	...	4	1	1	2	...	1	1	9	2	11
" 50	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Over 50	...	1	1	...	...	...	...	...	...	...	...	...	...	1	1
			19			18			9			9	31	24	
															=55
<i>Two relapses.</i>															
Under 10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
" 20	4	...	4	2	...	2	1	...	1	1	...	1	8	...	8
" 30	...	1	1	1	2	3	2	1	3	2	1	3	5	5	10
" 40	1	1	2	2	1	3	...	...	...	2	...	2	5	2	7
" 50	1	...	1	...	...	...	...	...	...	...	...	...	1	...	1
Over 50	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
			8			8			4			6	19	7	
															=26
<i>Three or more relapses.</i>															
Under 10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
" 20	...	...	...	1	...	1	...	...	...	...	...	...	1	...	1
" 30	...	1	1	4	...	4	1	2	3	...	...	...	5	3	8
" 40	1	1	2	1	...	1	1	...	1	...	...	...	3	1	4
" 50	...	...	...	...	...	...	1	...	1	...	...	...	1	...	1
Over 50	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
			3			6			5				10	4	
															=14
Total	20	10	30	21	11	32	11	7	18	8	7	15	60	35	95

From this table it will be seen that, in the first attacks, 30 patients had one or more relapses, equalling 15.150 per cent.; 32 relapsed in second attacks, equalling 17.089 per cent.; 18 in third or subsequent attacks, equalling 29.09 per cent.; and 10.100 per cent. relapsed of those in whom the number of attacks was not noted. These figures show the increased tendency to relapse in patients who have had acute rheumatism several times. The lesser liability to relapse in women is very much more marked than I

should have expected; not a few of the most prolonged and chronic cases occurred in women who had "heart affection."

Since the publication of Dr. Southey's interesting papers on "Acute Rheumatism" in these Reports,<sup>1</sup> I have tried to recognise in my patients the two forms he speaks of, the continuous and the relapsing; but as yet I can only recognise the fact that some relapse and some do not, and cannot in the least foretell the occurrence of the relapse. Neither do my cases seem to me to bear out his views of there being critical days. It is true that there appears to be a certain amount of periodicity in the occurrence of the relapse. I find that the relapses occurred as follows:—

On the 7th day of residence, 6	On the 14th day of residence, 5
" 8th " 11	" 15th " 5
" 9th " 0	" 16th " 8
" 10th " 10	" 17th " 0
" 11th " 5	" 18th " 4
" 12th " 4	" 19th " 4
" 13th " 5	

but I cannot make out that those days of residence have any constant relation to the days of the disease; for instance, of the ten relapsing on the tenth day of residence—

One was on the 12th day of illness.	Two were on the 17th day of illness.
" " 13th "	One was on the 20th "
" " 16th "	" " 22d "

The day of the disease was not known in the remaining three. The eleven who relapsed on the eighth day of residence offer just as great discrepancies in the duration of their attack. Of the eleven who relapsed on the eighth day, five had no second relapse, four relapsed twice—one on the thirteenth, one on the fifteenth, one on the nineteenth; two relapsed three times, in them the second relapse commenced on the thirteenth and fifteenth days of the attack. It is to be observed that none of my patients relapsed on the seventh or fourteenth day of the disease, the days which Dr. Southey<sup>2</sup> considered, from an analysis of his patients, critical in his relapsing form of rheumatism.

*Temperature.*—I have already stated that 100° was the standard. Cases below this limit were not counted as acute; those above, with the exceptions given on p. 270, were all included. It is interesting to note the numbers admitted at the various degrees of temperature, as they may roughly offer a sort of guide to the class of cases placed by me into the acute group. 19.317 per cent. of

<sup>1</sup> Vols. xiv. and xv.

<sup>2</sup> Vol. xiv. page 19.



all my cases were admitted with a temperature over  $100^{\circ}$  and under  $101^{\circ}$ ; 25.375 between  $101^{\circ}$  and  $102^{\circ}$ ; 33.319 between  $102^{\circ}$  and  $103^{\circ}$ ; 17.231 between  $103^{\circ}$  and  $104^{\circ}$ ; and 3.029 per cent. between  $104^{\circ}$  and  $105^{\circ}$ . The percentages of the male and female cases so closely agree that it is not worth giving them separately.

If we can depend upon Sir William Gull's and Dr. Sutton's conclusions as representing the normal course of acute rheumatism when not treated by drugs, it is worth noting the time at which my patients regained a normal temperature, which in most cases was coincident with the cessation of joint-pains. Sir William Gull and Dr. Sutton conclude "that the average duration of the acute symptoms, while patients were in hospital, and free from severe heart complications, was nine days." My cases yield the following results. I must first explain that I mean by "second day" the second complete day of residence in the Hospital. Thus a patient is admitted, say, on the 1st of the month; his treatment is commenced that afternoon, and his temperature does not rise above the normal on the evening of the 3rd of the month. In other words, it becomes normal before sixty hours have expired. Counting in this way I find the deferrescence of temperature as follows:—

	Men. Per Cent.	Women. Per Cent.	The two together. Per Cent.
On the 2nd day, . . .	14.100	28.204	21.003
„ 3rd „ . . .	29.150	33.069	31.133
„ 4th „ . . .	13.050	13.009	13.059
„ 5th „ . . .	6	6.156	6.158

So that the great bulk, 65.195 per cent. of all my patients, had their raised temperature and severe pain relieved before the expiration of 120 hours from the time of their admission to the Hospital. There does not seem to be any very intimate relation between the height of the fever and its duration. If we omit cases in which pericarditis was present, we find that in the four cases admitted among the men with a temperature of  $104^{\circ}$  and upward, remission of the fever took place in two on the second and in two on the third day. Among the women, on the other hand, none of those admitted with a temperature of  $104^{\circ}$  or upwards were free from their fever till the third day; two having a normal temperature on that day, three on the fourth, and one on the seventh. Taking the cases altogether, though I have not tabulated them, I should say that the fever lasted longer in those with a temperature of  $103^{\circ}$  or thereabouts than with a lower temperature, but the difference is not marked. The presence of pericardial friction usually, though

<sup>1</sup> *Medico-Chirurg. Trans.*, vol. lii. p. 82.

not constantly, seemed to have great influence in maintaining an elevated temperature.

Hyperpyrexia occurred but once and terminated fatally. A man, aged 32, was admitted with a temperature of  $103^{\circ}.6$  on the fourth day of a first attack. On the seventh day of the attack the temperature rose to  $107^{\circ}.4$  and he became unconscious; in spite of cold packing the temperature continued to rise and reached  $109^{\circ}$ ; he was then put into a bath cooled down to  $80^{\circ}$ . On removal from the bath his temperature was  $106^{\circ}$ , but fell shortly afterwards to  $104^{\circ}.8$ . Ice-packing was then substituted for the bath, but the patient died about twenty-four hours later, having never regained consciousness.

*Treatment.*—I have no intention of entering on the much debated question how to treat acute rheumatism. I shall only give a very brief sketch of the treatment to which the patients from whom these statistics are compiled, were subjected. Some of the earliest cases were treated with alkalies in full doses, usually twenty grains to half a drachm of bicarbonate of potash every three hours; by far the larger number have been treated by sodium salicylate, a few by antipyrin, and other drugs.

My patients are kept comparatively lightly clothed whilst in bed, between sheets, and not wrapped up in blankets or swathed in flannels, consequently the occurrence of sudamina in them is rare, and the sour acid odour of decomposing perspiration seldom met with. Topical applications to the joints are very seldom made use of; occasionally a painful joint is kept wrapped in cotton wool, and if pain remains fixed for a few days in a joint, I frequently apply a blister.

The ordinary milk-diet of the Hospital is given, which includes a pint of beef-tea or mutton broth, and I have never satisfied myself that the total withdrawal of meat-soups or broth is of any advantage. When the temperature has been normal for a day or two, and inclination for food has returned, I give rice or macaroni pudding, and after four or five days fish in addition to the milk-diet. Too early a return to the ordinary meat-diet of the Hospital appears to me a frequent cause of relapse.

I am doubtful whether sodium salicylate or any other mode of treatment at present known has any effect in lessening the tendency to endocarditis; it comes on usually so early in the course of the disease, that it is comparatively seldom in Hospital practice that the patients in whom it occurs are admitted before the commencement of endocarditis. In only eight instances among the men, and eleven among the women, did persistent murmurs of endocardial origin arise after admission. That is to say, if we take only those admitted without evidence of heart affection, in not

quite 8 per cent. These figures are confirmatory of the conclusion No. 9 arrived at by Sir William Gull and Dr. Sutton,<sup>1</sup> that "in rheumatic fever the tendency is for the heart to be diseased during the first few days of the fever, and should it escape the early days of the disease, there is each day a lessening tendency to its implication." I have used sodium salicylate largely, and never found any bad effects follow its use, and have met with no cases like those alluded to by Dr. Broadbent in his presidential address to the Clinical Society.<sup>2</sup> Care is taken to diminish the dose directly the full physiological effects of the drug are produced, and its administration is continued in small quantities for a fortnight or so after all fever and pain has ceased. The ordinary dose is in acute cases 20 grains every three hours. Antipyrin has not in my hand been so effectual in reducing the fever as the sodium salicylate, but I have not had large enough experience of its use to speak positively about it.

*Duration.*—The average stay of my patients in the Hospital was twenty-nine days for the women and thirty-one for the men, but I do not think these figures are any assistance to us in forming an opinion as to the duration of the disease. The average is greatly influenced by the occurrence of a few very prolonged cases. Several, both among men and women, were in the Hospital for more than 100 days; the longest, a woman, 138 days. Other causes besides the patient's actual condition have to be taken into consideration before discharging a patient.

*Concurrent Diseases.*—I have been surprised to find how seldom chorea has been noted as co-existent with acute rheumatism; only five female and four male patients thus suffered. One youth, aged 16, had maniacal chorea with pericarditis, and recovered after a long and most severe illness. One man had erythema multiforme, one erythema nodosum, and three erythema simplex; whilst among the women one had erythema simplex, and six erythema nodosum. Nineteen cases of gonorrhœal rheumatism, which have not been included in these tables, came under treatment. Urticaria was also present several times, but I have not a note of the exact numbers. I have already, p. 280, alluded to the small number of cases presenting serious lung affections. If my cases are compared with those of Dr. Latham,<sup>3</sup> the contrast is very great. In his 136 cases of acute rheumatism, although his proportion of cases with heart affection differs but little from mine, inflammation of the lungs was found in 24, or 17.028 per cent. The difference is too great to be merely accidental, and I

<sup>1</sup> *Loc. cit.* p. 83.

<sup>2</sup> *Clinical Society Transactions*, vol. xx. p. lxxii.

<sup>3</sup> *Syden. Society Publications*, 1876, vol. i. p. 99.

believe that it is due to a real improvement in the treatment of our patients.

Before closing this paper it may be well briefly to state the conclusions to which the analysis of my cases has led me. They differ little in the main from those generally held with regard to acute rheumatism and its connection with valvular disease of the heart. The statistics were drawn up with no preconceived object in view further than that of satisfying myself as to the frequency of pericarditis and severe lung affection in my own practice. I fear that they are in many ways imperfect, but their very imperfections to a certain extent prove their genuineness. I have confined myself to the best-marked and most easily recognised clinical facts, so as to avoid errors of diagnosis, which I believe frequently vitiate statistics that enter with too great detail into the clinical aspects of disease. My results are as follows:—

1. Men suffer in somewhat larger numbers and more severely from acute rheumatism than women.
2. More than half of those affected have some heart affection in their first attack; and more than two-thirds of those who suffer from a second attack are found to have old or recent endocarditis.
3. Endocarditis attacks men and women almost equally.
4. Men suffer more than twice as frequently from pericarditis as women.
5. The heart when affected is usually implicated within the first week of the attack.
6. The liability to cardiac affection diminishes with age.
7. No system of treatment, whether by drugs or otherwise, has as yet been shown to influence the tendency to endocarditis in acute rheumatism.
8. Relief from pain and fever occurs four or five days sooner in patients treated by sodium salicylate than in those treated by "absolute rest and regulated diet unaided by medicine."
9. Pericarditis is less frequent now than formerly.
10. Lung complications are much less frequent and very much less severe than formerly.
11. It yet remains to be proved whether Nos. 9 and 10 are due to the treatment by sodium salicylate or to other causes.





SOME OBSERVATIONS  
ON  
THE MORBID ANATOMY OF GOUT.

BY  
NORMAN MOORE, M.D.

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The post-mortem examinations recorded in this paper were made by me in the post-mortem room of St. Bartholomew's Hospital from 1880 to 1887, and serve to illustrate some points in the morbid anatomy of gout.

Sir Alfred Garrod has published in his work on gout some details of sixteen post-mortem examinations of cases of gout, and other authors have published further series; but they have for the most part limited their descriptions to the joints, and no one has, so far as I know, published any record giving the whole post-mortem examination of a large series of cases in which gouty change was found in the joints.

It therefore seems worth while, notwithstanding the comparatively uninteresting nature of many of the details, to publish the following observations of the post-mortem appearances in eighty cases of gout.

In some of the cases recorded in this paper no history of attacks of gout had been obtained from the patient during life, but from the point of view of morbid anatomy gout must be considered to exist wherever free urate of soda has been discovered in any cartilage of the body.

In every example in which there was room for doubt as to the nature of a white deposit in cartilage, it was tested chemically (murexine test) before it was recorded in my notes as consisting of urate of soda.

The distribution of the changes in each particular joint, the nature of the morbid conditions in articular cartilages which accompany a deposit of urate of soda in them, and the relation of

the post-mortem appearances to the clinical features of gout I hope to describe in a subsequent paper.

The following conclusions seem justified by the present series of observations as regards the distribution of urate of soda in articular cartilages, and the visceral changes accompanying it:—

1. That degenerative changes are usually present in the same joint, or in other joints of the same body, or in both, where urate is present even in a single joint.

2. That deposits of urate of soda, like other degenerative changes, are usually more or less symmetrically arranged on both sides of the body.

3. That it is commoner to find a deposit in the joints of the legs than of the arms.

4. That a deposit may be present in nearly all the joints of the lower limbs, and absent from those of the upper limbs.

5. That a deposit is commoner in the metatarso-phalangeal joint of the great-toe than in the phalangeal joint.

6. That however abundant in and below the knees, a deposit is rare in the hip-joint.

7. That a deposit is often found in the great-toes and knees when absent in the ankles, but not in the ankles when absent in the toes and knees.

8. That when present in the ankles, some deposit may usually be found in the ligaments of the foot.

9. That the elbow-joint has deposit when one is present in the wrist.

10. That the sterno-clavicular joint rarely contains deposit.

11. That the articulations of the larynx rarely contain deposit.

12. That in all joints the deposit may sometimes be found beneath a swollen or degenerate patch of cartilage when it is not visible on the surface.

13. That chronic interstitial nephritis is found in a large proportion of those bodies in which urate of soda is to be seen in the joints.

14. That emphysema of the lungs is an equally constant lesion in such cases.

15. That chronic interstitial nephritis (and of course emphysema) are not invariably accompanied by urate of soda in the articular cartilages, though usually accompanied by some traces of degeneration in some of the articular cartilages.

16. That urate of soda is present in the joints of a large proportion of those persons over forty years of age who die of cerebral hæmorrhage.

17. That extensive deposit of urate of soda may exist in the articular cartilages without any external deposit, such as tophi

in the ear, and that it is comparatively rare for tophi in the ear to be present in such cases.

18. That in a majority of cases of cirrhosis of the liver, urate of soda is not to be found in the joints.

19. That it is common to find urate of soda in the joints of those persons whose aortic valves show chronic degenerative changes with calcification, and who therefore belonged to the class of patients likely to have had angina pectoris.

20. That the clinical observation that the symptoms of gout are commoner in men than in women corresponds to the post-mortem results as to the presence of urate of soda in the joints.

These general conclusions support the hypothesis that gout with its accompanying conditions, acute and chronic, is a condition which never occurs in tissues perfectly normal before its onset, but that it is a disease affecting bodies in which degenerative changes have been already going on for some time.

The notes of the cases are given as they were written at the time, and are followed by tables of 55 cases of chronic interstitial nephritis, 11 cases of chronic parenchymatous nephritis, 35 cases of cerebral hæmorrhage, and 23 cases of cirrhosis of the liver, showing the relative frequency of deposit of urate of soda in each disease.

*Table of Cases of Chronic Interstitial Nephritis.*

MALES.

Age.	Deposit of Urate of Soda.	Age.	Deposit of Urate of Soda.	Age.	Deposit of Urate of Soda.
28	Present.	46	None.	59	Present.
34	None.	46	None.	60	Present.
35	Present.	46	None.	62	Present.
38	None.	47	Present.	63	None.
40	None.	49	Present.	63	Present.
41	Present.	49	Present.	64	None.
41	Present.	49	Present.	64	Present.
41	Present.	51	None.	65	None.
41	Present.	51	None.	66	Present.
43	Present.	52	Present.	73	None.
43	Present.	54	Present.	74	None.
44	Present.	59	None.	75	None.
45	Present.	59	None.	76	None.



## FEMALES.

Age.	Deposit of Urate of Soda.	Age.	Deposit of Urate of Soda.	Age.	Deposit of Urate of Soda.
34	Present.	48	None.	55	None.
36	None.	49	None.	56	Present.
38	None.	50	Present.	66	None.
42	None.	50	Present.	66	Present.
47	None.	52	None.	77	None.
48	None.				

*Table of Cases of Chronic Parenchymatous Nephritis.*

## MALES.

Age.	Deposit of Urate of Soda.	Age.	Deposit of Urate of Soda.	Age.	Deposit of Urate of Soda.
22	None.	38	Present.	46	None.
23	None.	40	Present.	47	None.
36	None.	46	None.	48	None.

## FEMALES.

Age.	Deposit of Urate of Soda.	Age.	Deposit of Urate of Soda.
20	None.	50	None.

*Table of Cases of Cerebral Hæmorrhage.*

MALES.

Age.	Deposit of Urate of Soda.	Age.	Deposit of Urate of Soda.	Age.	Deposit of Urate of Soda.
28	Present.	45	Present.	54	Present.
28	None.	46	None.	55	None.
36	None.	46	None.	60	None.
37	None.	46	Present.	61	None.
39	Present.	46	None.	61	Present.
39	Present.	48	None.	62	Present.
40	None.	49	None.	62	Present.
41	None.	51	None.	64	None.
41	Present.	51	None.	66	Present.
41	Present.	52	None.	72	None.
41	Present.	54	None.		

FEMALES.

38	None.	42	None.	47	None.
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*Table of Cases of Cirrhosis of Liver.*

MALES.

Age.	Deposit of Urate of Soda.	Age.	Deposit of Urate of Soda.	Age.	Deposit of Urate of Soda.
22	None.	41	Present.	53	None.
27	None.	43	Present.	59	None.
32	None.	44	None.	60	Present.
37	None.	44	None.	60	None.
40	None.	49	None.		

FEMALES.

34	None.	46	None.	61	None.
40	None.	49	None.	65	None.
44	None.	60	None.	67	None.

## No. 1.—HENRY P. 46.

EXTERNAL APPEARANCES . . . Lean ; slight anasarca of ankles ; both knees swollen ; fingers all deformed ; joints nodulated ; teeth well arranged and formed, set almost complete ; well-marked blue line on gums.

## HEAD :

CRANIAL BONES, DURA MATER, AND SINUSES . . . . . Normal.

ARACHNOID AND PIA MATER . . . A patch of firm whitish material in pia mater over left anterior frontal lobe.

ARTERIES . . . . . Normal, except left middle cerebral, which was much calcified.

BRAIN . . . . . In centre of pons, below the iter, a small recent hæmorrhage.

SPINAL CORD . . . . . Meninges and substance both normal.

EYE . . . . . No deposit in tarsal cartilages.

EARS . . . . . Tophus in upper part of pinna of left ear.

## CHEST :

ŒSOPHAGUS AND GLANDS OF NECK . . . . . Normal.

LARYNX AND TRACHEA . . . A small thickening of white colour at outer end of each cord ; otherwise normal.

LUNGS . . . . . *Right* : lowest lobe consolidated, grey, airless, section granular in parts, bathed with purulent exudation ; upper lobes œdematous. *Left* : normal.

HEART . . . . . Pericardium coated with a fine deposit of lymph and distended with fluid. Valves all normal ; left ventricle hypertrophied ; weight of heart, 13 oz.

AORTA . . . . . Very slightly atheromatous.

## ABDOMEN :

PERITONEUM, STOMACH, INTESTINES, LIVER, SPLEEN, PANCREAS, }  
ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . . } Normal.

KIDNEYS . . . . . Weight of pair, 5½ oz. ; very small ; scarcely any cortex ; capsule firmly adherent ; surface granular ; small deposits in tubules, easily visible to naked eye. Microscopic section showed extreme atrophy of glomeruli ; great increase of interstitial connective tissue, and almost complete absence of epithelium in the tubules.

URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.

JOINTS . . . . . Vertebrae, no lipping of edges of bodies, and no ankylosis. Occipito-vertebral, normal. Knees, *right* : opened and removed. Before opening it was pierced and the exuding fluid collected. This was thick and puriform. Both surfaces of the joint and the patella were covered with a thick deposit of white material (on testing found to be urate of soda), and the same material covered the outside of the capsules, and the fat in the neighbourhood of the joint was speckled with it. It did not scrape off. The thick fluid when analysed was found to contain no urate of soda and no free uric acid. The *left knee* contained a large quantity of clear fluid. It showed the same incrustation. Both joints showed large irregular lips of bone. The *right index* metacarpo-phalangeal joint was similarly incrustated, and outside the joint there was a small whitish mass. The same joint (*index*) on left side showed the same appearances. Both *great-toe* joints were examined, and showed the same incrustation. The *left hip-joint* was incrustated, the edge of the

acetabulum lipped. The *left elbow-joint* was likewise incrusted. No joints but the knees contained any effusion. The other elbow and hip and the shoulder-joints were not examined. The bones seemed very oily, but to the naked eye showed no deposit in their shafts. The cartilages were nowhere eroded. The sterno-clavicular-joints were not incrusted, and the interarticular fibro-cartilage was normal. Muscles of fore-arms quite natural.

**No. 2.—EDWARD P. 52.**

EXTERNAL APPEARANCES . . . Fairly nourished; a deep ragged cut over temporal fossa; no fracture.

**HEAD:**

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER . . . Normal.

ARTERIES . . . . . Atheromatous.

BRAIN . . . . . In anterior frontal lobe of right cerebral hemisphere a large recent extra-ventricular hæmorrhage.

EARS . . . . . No tophi.

**CHEST:**

ESOPHAGUS AND GLANDS OF NECK . . . . . Normal.

LARYNX AND TRACHEA . . . . . Gritty deposits (not urate of soda, but calcareous degeneration) in epiglottis; joints and cords normal.

LUNGS . . . . . Emphysematous.

HEART . . . . . Pericardium and valves normal; weight, 20 oz.; great hypertrophy of left ventricle, and some hypertrophy of right ventricle.

**ABDOMEN:**

PERITONEUM, STOMACH, INTESTINES, LIVER, SPLEEN, PANCREAS, } Normal.  
ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . . }

KIDNEYS . . . . . Very small; weight,  $4\frac{1}{2}$  oz.; surface uneven; capsule adherent; cortex narrow; in pyramids some minute earthy streaks.

URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.

JOINTS . . . . . Both great-toe joints (right and left) looked a little full. The left found to be coated with urate of soda. In the left knee there was a slight deposit of the same in streaks on the condyles of the femur and on the patella: none on the tibia. The right hip-joint and index metacarpo-phalangeal joint had no deposit, but in the prævertebral fascia in the middle of the neck was a small whitish gritty deposit. This lay quite outside any joint, and in the fascia itself. A slight erosion was to be seen on the articular surface of one patella. No lipping was found near the joints, nor was there any urate of soda in the fat about the knees. The deposits in the epiglottis gave no reaction, but that in the prævertebral fascia of the neck and those in the joints gave well-marked murexine reaction.

**No. 3.—P. 37.**

**HEAD:**

ARTERIES . . . . . All highly atheromatous.

EARS . . . . . No tophi.

**CHEST:**

HEART . . . . . Left ventricle: four small calcareous plates in endocardium of left auricle (not urate of soda). Valves all normal; left ventricle hypertrophied; weight of heart, 15 oz.



**ABDOMEN :**

KIDNEYS . . . . . Very hard, rough on surface ; cortex narrow ;  
no deposit visible in tubules of pyramids ;  
weight, 9 oz.

JOINTS . . . . . Both great-toes opened. In the left was a  
tolerably abundant deposit of urate of soda, most abundant at the  
edges of the joint. In the right there was no superficial deposit,  
but in the centre of the distal surface was a small opaque spot in  
the substance of the cartilage. It proved not to be urate of soda,  
but a patch of degeneration. The left knee showed no trace of depo-  
sit, nor did the right hip, nor the right index (metacarpo-phalangeal)  
joint, nor the right thumb (metacarpo-phalangeal) joint.

**No. 4.—CHARLES A. 45.**

EXTERNAL APPEARANCES . . . Fairly nourished.

**HEAD :**

ARTERIES . . . . . Not atheromatous.

BRAIN . . . . . Normal.

SPINAL CORD . . . . . Normal.

EARS . . . . . No tophi.

**CHEST :**

ŒSOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . . Normal.

LUNGS . . . . . *Right* : upper lobe consolidated, airless, with  
shreds of lymph on pleura ; middle lobe  
with a small upper stratum of consolida-  
tion, in lower part œdematous. *Left* :  
normal.

HEART . . . . . Some lymph in pericardial sac ; foramen ovale  
patent ; left ventricle much hypertrophied ;  
right ventricle slightly hypertrophied.  
Valves normal.

AORTA AND VESSELS . . . . . But slightly atheromatous.

**ABDOMEN :**

PERITONEUM, STOMACH, AND INTESTINES . . . . . Normal.

LIVER . . . . . Large and soft.

SPLEEN . . . . . Slightly enlarged.

PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . . Normal.

KIDNEYS . . . . . Cortex diminished in size, surface granular ;  
capsule adherent ; a few small cysts pre-  
sent.

URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.

JOINTS . . . . . *Right* great-toe (metatarso-phalangeal joint)  
with scattered but tolerably abundant deposit of urate of soda.  
*Left* great-toe, same joint, without any deposit. *Right* knee no  
deposit.

**No. 5.—ROBERT C. 60.**

EXTERNAL APPEARANCES . . . Lean ; legs anasarous.

**HEAD :**

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER . . . Normal.

ARTERIES . . . . . Atheromatous.

BRAIN AND SPINAL CORD . . . . . Normal.

EARS . . . . . No tophi.

**CHEST :**

LARYNX AND TRACHEA . . . . . Joints examined and found normal.

LUNGS . . . . . Highly œdematous.

HEART . . . . .	Scanty deposit of soft lymph on both surfaces of pericardium; aortic valves thickened, incompetent, and with a large soft growth on one cusp.
ABDOMEN: . . . . .	Considerable ascites.
STOMACH AND INTESTINES . .	Normal.
LIVER . . . . .	Very dense; weight, 65 oz.
SPLEEN . . . . .	Soft; weight, 13 oz.
PANCREAS . . . . .	Normal.
ABDOMINAL LYMPHATICS . .	Those near the pancreas and in hilum of liver enlarged.
SUPRA RENALS . . . . .	Normal.
KIDNEYS . . . . .	Very small and hard, with many cysts; cortex narrow, surface irregular.
URETERS AND BLADDER . .	Normal.
JOINTS . . . . .	Right knee with one speck of urate of soda on patella. No deposit on femur and tibia. Both great-toes (metatarso-phalangeal-joint) coated with urate of soda, and much deposit outside the joint on left side. None in ankle-joints. No deposit in cervical vertebral joints.

No. 6.—JOHN HENRY W. 39.

EXTERNAL APPEARANCES . .	Fairly nourished.
HEAD:	
CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER, } ARTERIES, AND BRAIN . . . . . }	Normal.
EARS . . . . .	No tophi.
CHEST:	
ESOPHAGUS . . . . .	Deep ragged ulceration of left tonsil.
LUNGS . . . . .	<i>Left</i> : the whole lower lobe consolidated, airless, with abundant purulent exudation on section. <i>Right</i> : œdematous; some dense organised adhesions on both sides.
HEART . . . . .	Weight, 11 oz.; valves normal.
ABDOMEN:	
PERITONEUM, STOMACH, INTESTINES, LIVER, SPLEEN, PANCREAS, } ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . . }	Normal.
KIDNEYS . . . . .	Weight, 9½ oz.; capsule adherent; surface rough; cortex somewhat narrow.
URETERS AND BLADDER . .	Normal.
JOINTS . . . . .	<i>Right side</i> : great-toe, metatarso-phalangeal joint, proximal and distal surface both thickly coated with urate of soda; phalangeal joint, no deposit. <i>Ankle</i> : astragalus and tibia with scattered deposit of urate of soda; some deposit also on fibula. <i>Knee</i> : no deposit on tibia. Semilunar cartilages normal. Scattered specks of deposit on femur, and a few scattered specks on the internal articular surface of the patella. <i>Hip</i> : no deposit. <i>Index</i> : metacarpophalangeal joint, no deposit. <i>Sterno-clavicular</i> : no deposit. <i>Left side</i> : great-toe, metatarso-phalangeal joint, proximal and distal surface, abundant deposit, but slightly less than on right side. <i>Knee</i> : one speck of urate of soda on internal articular surface of patella. None on femur or tibia. Semilunar cartilages normal. The fourth cervical vertebral joint and the third and fourth lumbar joints opened and found to be without deposit.

No. 7.—EDWARD M. 58.

HEAD:	
ARTERIES . . . . .	Not atheromatous.

BRAIN . . . . .	Clots in third and fourth ventricle, blood-stained serum in lateral ventricle; walls of iter destroyed and pons filled with a large clot extending to within a short distance of its external surface on all sides. The hæmorrhage extended into the crura cerebri and posterior part of each optic thalamus.
EARS . . . . .	No tophi.
<b>CHEST:</b>	
LARYNX AND TRACHEA . . .	Normal.
LUNGS . . . . .	Emphysematous.
HEART . . . . .	Weight, 15 oz.; well-marked hypertrophy of left ventricle; valves normal.
AORTA AND VESSELS . . .	Highly atheromatous.
<b>ABDOMEN:</b>	
LIVER AND SPLEEN . . . .	Normal.
KIDNEYS . . . . .	Small, hard, granular; cortex diminished in width; a cyst on each.
URETERS AND BLADDER . . .	Normal.
JOINTS . . . . .	Great-toe joints (metatarso-phalangeal) slightly deformed. On opening them, a well-marked deposit of urate of soda was found in both. The right knee was opened, and showed no deposit and no erosion of cartilage.

**No. 8.—FREDERICK H. 40.**

<b>HEAD:</b>	
CRANIAL BONES . . . . .	Fracture across base of skull.
ARTERIES . . . . .	Not atheromatous.
BRAIN . . . . .	Extensive effusion of blood on surface of both sides of cerebrum and cerebellum under the pia mater; a hæmorrhage with a patch of softening round it in left corpus striatum.
EARS . . . . .	No tophi.
<b>CHEST:</b>	
LUNGS . . . . .	Normal.
HEART . . . . .	Valves normal; left ventricle hypertrophied; weight, 15 oz.
<b>ABDOMEN:</b>	
KIDNEYS . . . . .	Capsule adherent, surface granular; a small cyst on each; cortex narrow.
JOINTS . . . . .	Right great-toe free from deposit; metatarso-phalangeal joint quite smooth. Left great-toe (same joint), both surfaces thickly coated with urate of soda.

**No. 9.—EMMA S. 30.**

EXTERNAL APPEARANCES . . .	General anasarca.
<b>HEAD:</b>	
CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER . .	Normal.
ARTERIES . . . . .	Atheromatous.
BRAIN . . . . .	Normal.
EARS . . . . .	No tophi.
<b>CHEST:</b>	
ESOPHAGUS AND GLANDS OF NECK . . . . .	Normal.
LARYNX AND TRACHEA . . .	Normal.

- LUNGS . . . . . Some old adhesions on both sides. *Left*: very cedematous. *Right*: lowest lobe consolidated; granular on section; sinking in water.
- HEART . . . . . Weight, 17 oz. Hypertrophy of both ventricles. Valves normal. Muscular substance pale and easily torn.
- ABDOMEN:
- PERITONEUM . . . . . Thickened; considerable ascites.
- STOMACH . . . . . Normal.
- INTESTINES . . . . . Matted together by numerous and in parts organised adhesions.
- LIVER, SPLEEN, PANCREAS, ABDOMINAL LYMPHATICS, SUPRA RENALS . . . . . Normal.
- KIDNEYS . . . . . Small, granular on surface, pale and red in patches, capsule adherent. In pyramids well-marked streaks of gritty deposit.
- URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.
- JOINTS . . . . . *Right side*: Great-toe, metatarso-phalangeal joint, both surfaces thickly coated with urate of soda; none in the fat about the joint. Phalangeal joint of great-toe, urate of soda on both surfaces, not covering them, but in well-marked spots. Second toe: metatarso-phalangeal joint with abundant deposit on both surfaces. Third toe, fourth toe, and little toe all with abundant deposit on both surfaces of metatarso-phalangeal joint. In none of these joints was there any erosion of the cartilages. Astragalus: all its articular surfaces were coated with urate of soda; no erosion was present. Calcaneum: all its articular surfaces were coated; no erosion. Scaphoid: proximal articular surface thickly coated; distal surface also coated; no erosion. Cuneiform bones: proximal surface coated and the lateral articular surfaces; no erosions. All the ligaments of the ankle-joint had urate of soda deposits in their substance or on their internal surface. Tibia: several spots of deposit on the surface of the ankle-joint; no erosion. Knee: semilunar cartilages normal. Several patches of deposit on the head of the tibia; no erosion. Head of fibula free from deposit. None on the ligaments or in the fat about the joint. Femur: on the inner condyle a few thick spots of deposit, and on the outer condyle a few very small specks. Patella: some erosion, with deposit of urate of soda in the eroded parts. Elbow: a few streaks of deposit on the inner surface of the humerus and on the articular surface of the ulna. *Left side*: great-toe, metatarso-phalangeal joint, deposit thicker than on the right side on both surfaces of the joint. Second toe, metatarso-phalangeal joint, a speck of deposit of considerable thickness on the proximal surface of the phalanx; none on the metatarsal bone. Knee, no deposit on any surface. Patella, considerable erosion about the middle part of the articular surface. Hip, head of femur, no deposit and no erosion. Occipito-atlantoides joint, no deposit.

NO. 10.—MATTHEW S. 73.

- EXTERNAL APPEARANCES . . . . . Fairly nourished; no anasarca.
- HEAD:
- CRANIAL BONES . . . . . Calvaria thicker than natural.
- DURA MATER . . . . . Very firmly adherent to brain along longitudinal fissure.
- ARTERIES . . . . . Highly atheromatous.
- BRAIN . . . . . A large hæmorrhage into corpus striatum and optic thalamus on left side; a second small hæmorrhage into pons.



**CHEST :**

LARYNX AND TRACHEA . . .	Normal.
LUNGS . . . . .	Firm adhesions on both sides ; emphysematous.
HEART . . . . .	Weight, 18 oz. ; hypertrophy of left ventricle, and some hypertrophy with dilatation of right ventricle.

**ABDOMEN :**

STOMACH, INTESTINES, LIVER, SPLEEN, PANCREAS, ABDOMINAL LYM- PHATICS, AND SUPRA RENALS . . . . .	} Normal.
KIDNEYS . . . . .	
	Small ; granular on surface ; capsules adherent ; cortex very narrow ; deposit visible in tubules in pyramids.

URETERS AND BLADDER . . . Normal.

**JOINTS** . . . . . *Right side:* great-toe, metatarso-phalangeal joint, both surfaces thickly coated with urate of soda ; phalangeal joint, no deposit. The astragalus, cuboid, scaphoid, and all three cuneiforms with deposit on every surface. Second toe, metacarpo-phalangeal joint, without deposit. Tibia, ankle, many streaks of urate of soda. There was much deposit of urate of soda in the fascia and ligaments of the foot, and in one mass of fat there was a sprinkling of urate of soda. Knee, femur, tibia, with streaks and patches of deposit. Patella thickly coated with deposit in parts. On its outer and anterior surface was a nodule of urate of soda as large as half a hazel-nut. This was obvious as a lump, before the skin was reflected. The outer semilunar cartilage had a deposit of urate of soda on its surface and in its substance. Hand, index-finger, metacarpo-phalangeal joint, no deposit. Elbow, humerus, and ulna, both with several streaks and patches of deposit. Shoulder-joint, no deposit. Sterno-clavicular, no deposit. *Left side:* great-toe, metatarso-phalangeal, with abundant deposit, but less than on right side. Knee, a slight erosion, but no deposit on the patella ; the erosion at its lower edge. A well-marked deposit on the outer condyle of the femur. None on the tibia. Shoulder, sterno-clavicular, no deposit. The cervical vertebræ were all more or less ankylosed together, and there were other ankyloses in the column in the dorsal and lumbar region, but no urate of soda was discovered about the vertebræ or the fascia in their vicinity. On section, several of the costal cartilages showed a central deposit, which looks like urate of soda.

**No. 11.—CHARLES H. 27.**

**EXTERNAL APPEARANCES** . . . Lean ; no anasarca.

**HEAD :**

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER .	Normal.
ARTERIES . . . . .	Not at all atheromatous.
BRAIN AND SPINAL CORD . . .	Normal.
EARS . . . . .	No tophi.

**CHEST :**

LUNGS . . . . .	Some old adhesions on both sides ; otherwise normal.
HEART . . . . .	Pericardium and valves, normal ; slight hypertrophy of left ventricle ; weight, 12 oz.
AORTA . . . . .	A very few patches of degeneration ; no calcification.

**ABDOMEN :**

PERITONEUM, STOMACH, AND INTESTINES . . . . .	Normal.
LIVER . . . . .	Surface rough ; tissue firm ; much increase of connective tissue ; weight, 61 oz.

SPLEEN . . . . .	Weight, 6 oz. ; soft.
PANCREAS . . . . .	Normal.
KIDNEYS . . . . .	Hard ; very little smaller than natural ; capsule adherent ; surface granular ; cortex slightly narrowed ; no deposit in tubules.
URETERS AND BLADDER . .	Normal.
JOINTS . . . . .	<i>Right side</i> : great-toe, metatarso-phalangeal joints with an abundant deposit of urate of soda, particularly thick on the edges of the joint ; there was also some in the ligaments and fascia about the joint. No deposit on sesamoids. Phalangeal joint, normal. Metatarso-phalangeal joints of toes II., III., IV., normal. Cuneiform bones (all faces examined), no deposit. Scaphoid, on its cuneiform surface, no deposit ; on its astragalus surface, a deposit of considerable area occupying the middle part of the bone. Astragalus : an abundant scattered deposit on the scaphoid surface, but none on the ankle surface. Ankle : no deposit on end of tibia. Knee : on the inner condyle of the femur there was a thick patch of deposit ; none on the outer condyle. Deposit in cartilage in intercondyloid groove ; none on crucial ligament. Patella : on the applied surface are specks on the part opposed to the inner condyle ; on the upper edge a thick deposit, which does not extend on to the articular surface. Semilunar cartilages, no deposit. Tibia with a white deposit on the outer half of the articular surface. Deposit also on inner semilunar cartilage. Hip, no deposit on acetabulum or head of femur. Shoulder, no deposit. Elbow, no deposit. <i>Left side</i> : great-toe, metatarso-phalangeal joint with a thick deposit on and over the edges, and a few specks on the middle parts of both surfaces. Phalangeal joint normal. Scaphoid with a deposit on the astragalus surface only ; a few specks on the opposed surface of astragalus. Knee : patella with a deposit in the same position as on the right side, <i>i.e.</i> , at the upper edge. No deposit on femur, semilunar cartilages, or tibia. On neither side was there any deposit in fat. Elbow without deposit. The inter-vertebral cartilages were normal, and there was no deposit in the fascia about the spinal column. The inner surface of the olecranon (in both arms) showed a breach (to the eye) in the continuity of the cartilage, but no erosion could be felt, the surface being quite smooth. No erosion was observed in any joint.

No. 12.—ALFRED H. 34.

EXTERNAL APPEARANCES . .	Lean ; no anasarca.]
HEAD :	
CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER .	Normal.
ARTERIES . . . . .	Somewhat atheromatous.
BRAIN . . . . .	Normal.
EARS . . . . .	No tophi.]
CHEST :	
LUNGS . . . . .	An old empyema of right side (opened) with necrosis of rib ; left lung emphysematous, and with some deposit of tubercle.
HEART . . . . .	Hypertrophied, and dilated ; valves normal ; ante-mortem clots in right auricle, right ventricle, and apex of left ventricle ; adherent, reticulate on surface, and soft in middle.
ABDOMEN :	
STOMACH AND INTESTINES . .	Normal.
LIVER . . . . .	Adherent, with very thick adhesions, to diaphragm ; ducts normal.

SPLEEN . . . . .	Large and soft; weight, 13 oz.
KIDNEYS . . . . .	Large, red, but capsule adherent; surface granular; on microscopic section showing a large increase of fibrous tissue.
URETERS AND BLADDER . . . . .	Normal.
JOINTS . . . . .	Right great-toe normal. Left great-toe, metatarso-phalangeal joint with a scanty deposit of urate of soda on each surface of the joint. Phalangeal joint free from deposit.

**No. 13.—PATRICK D. 53.**

EXTERNAL APPEARANCES . . Muscular; very fat; no anasarca.

**HEAD:**

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER, } Normal.  
AND ARTERIES . . . . . }

BRAIN . . . . .	Normal.
EYE . . . . .	Normal.
EARS . . . . .	No tophi.

CHEST: . . . . . All costal cartilages calcified.

LARYNX AND TRACHEA . . . . . Normal.

LUNGS . . . . . On left side an adhesion to ribs iv. and v., each of which showed a healed fracture 3 inches from head; emphysematous.

HEART . . . . . Pericardium and valves normal; muscular tissue pale and soft; left ventricle hypertrophied; weight, 16 oz.

**ABDOMEN:**

PERITONEUM . . . . . No peritonitis.

STOMACH . . . . . Two inches from pylorus an ulcer of tester size; three minute clots were adherent in its base, and filled openings into pancreatico-duodenalis artery.

INTESTINES . . . . . Normal; no blood in them or in stomach.

LIVER . . . . . Enlarged; weight, 84 oz.; ducts free.

SPLEEN . . . . . Enlarged, pale, and soft; weight, 8 oz.

PANCREAS . . . . . Adherent to stomach.

KIDNEYS . . . . . Small, surface granular, capsule adherent, cortex narrow; no deposit in tubules.

URETERS AND BLADDER . . . . . Normal.

JOINTS . . . . . *Right side:* great-toe, metatarso-phalangeal joint, on proximal surface no deposit; at base of proximal end of phalanx a thick speck of urate of soda. Phalangeal joint, no deposit. Scaphoid, on the cuneiform surface a widely spread deposit; on the astragaloid, none. Astragalus, no deposit on ankle surface or on scaphoid surface. Ankle, no deposit. Knee: patella and tibia, no deposit. In the anterior condyloid groove there was a narrow line of erosion, half an inch long. No deposit was visible on the surface of the femur, but on cutting into this groove a copious linear deposit was found in the cartilage. No deposit was found on section in any other part of the cartilage. *Left side:* great-toe, metatarso-phalangeal joint, no deposit; on proximal surface of phalanx a speck, smaller than on right side, but quite distinct, was visible at the base of the cup. Phalangeal joint, no deposit. Knee: patella and tibia normal. An erosion (precisely similar to that on right side) in anterior condyloid groove. On the surface near it, and in it, a deposit of urate of soda. In the upper part of the posterior crucial ligament there was a deposit on the surface and in the substance of the ligament. The fingers were not deformed. No joints opened in hand.

No. 14.—THOMAS H. 57.

EXTERNAL APPEARANCES . . .	Fairly nourished; no anasarca.
<b>HEAD:</b>	
CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER . . .	Normal.
ARTERIES . . . . .	All highly atheromatous.
BRAIN . . . . .	Left corpus striatum and optic thalamus destroyed by a hæmorrhage outside inner capsule; part within inner capsule yellow and softened.
EARS . . . . .	No topi.
<b>CHEST:</b>	
LUNGS . . . . .	Emphysematous.
HEART . . . . .	Some lymph on pericardium; valves normal; left ventricle hypertrophied.
<b>ABDOMEN:</b>	
LIVER . . . . .	Normal.
SPLEEN . . . . .	Very small.
KIDNEYS . . . . .	Firm; not very small; granular on surface; on one a cyst; capsule adherent.
URETERS AND BLADDER . . .	Normal.
JOINTS . . . . .	<i>Right:</i> great-toe, metatarso-phalangeal joint, two small specks of urate of soda on the phalangeal surface. Metatarsal surface, no deposit. <i>Left:</i> great-toe, joint without cartilage; many osteophytes about it. The whole of both surfaces rugose and granular. No deposit.

No. 15.—GEORGE T. 57.

EXTERNAL APPEARANCES . . .	Muscular; no anasarca; a good deal of fat.
<b>HEAD:</b>	
CRANIAL BONES . . . . .	Heavier than natural; very little diploë.
DURA MATER, SINUSES, ARACHNOID, AND PIA MATER . . . . .	Normal.
ARTERIES . . . . .	All atheromatous; arteries of Sylvian fissures most so; cerebellar arteries least so.
BRAIN . . . . .	A recent hæmorrhage into left corpus striatum; an old hæmorrhage in right corpus striatum; a large recent hæmorrhage into left lobe of cerebellum.
EYE . . . . .	Normal.
EARS . . . . .	No topi.
<b>CHEST:</b>	
LARYNX AND TRACHEA . . .	Normal.
LUNGS . . . . .	Some old adhesions on both sides; emphysematous; pulmonary artery showing many patches of atheroma.
HEART . . . . .	Much fatty degeneration (on microscopic examination); aortic valves thickened; mitral, one cord thickened; no growths on any valve.
AORTA . . . . .	With many atheromatous patches, but no calcification.
<b>ABDOMEN:</b>	
PERITONEUM, STOMACH, INTESTINES, LIVER, SPLEEN, PANCREAS, AND } ABDOMINAL LYMPHATICS . . . . .	Normal.
KIDNEYS . . . . .	
URETERS AND BLADDER . . .	Normal.



**JOINTS** . . . . . *Right side:* great-toe, metatarso-phalangeal joint, three small specks of urate of soda on the phalangeal aspect of the joint (embedded in the cartilage); none on the proximal surface. Knee, no deposit. Crico-arytenoid, no deposit. *Left side:* ankle, no deposit. Great-toe, a copious deposit covering both surfaces; no deposit in fat; some erosion on outer part of articular surface of metatarsal. Crico-arytenoid, no deposit. No deposit in prævertebral fascia.

### No. 16.—THOMAS C. 32.

**EXTERNAL APPEARANCES** . . Fat; no anasarca.

#### HEAD:

**CRANIAL BONES** . . . . . Heavy.  
**DURA MATER, SINUSES, ARACHNOID, AND PIA MATER** . . . . . Normal.  
**ARTERIES** . . . . . Slightly atheromatous.  
**BRAIN** . . . . . Normal.  
**EYE** . . . . . Normal.  
**EARS** . . . . . No topi.

#### CHEST:

**LUNGS** . . . . . Edematous; a small effusion in each pleural cavity.  
**HEART** . . . . . Weight,  $12\frac{1}{2}$  oz. Valves, normal; slight hypertrophy of left ventricle.

#### ABDOMEN:

**STOMACH AND INTESTINES** . . Normal.  
**LIVER** . . . . . Normal.  
**SPLEEN** . . . . . Slightly enlarged.  
**KIDNEYS** . . . . . Granular on surface; capsule adherent; cortex narrow.

**URETERS AND BLADDER** . . Normal.

**JOINTS** . . . . . *Right side:* great-toe, phalangeal joint, no deposit; metatarso-phalangeal, deposit on both surfaces (with erosion). Deposit on both sesamoid bones. Ankle: no deposit. Knee: deposit on patella (with much degeneration), femur, and semilunar cartilage. This deposit was more extensive deep down in the cartilage than on the surface. None on tibia. Elbow: deposit on ulna and humerus; none on radius. Ninth rib: articulation with vertebra; no deposit. *Left side:* great-toe, metatarso-phalangeal, deposit on both sides. Knee: deposit on femur and patella. Deposit equal on the two sides, though not symmetrical.

### No. 17.—STEPHEN T. 49.

**EXTERNAL APPEARANCES** . . Lean; no anasarca.

#### HEAD:

**CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER** . Normal.  
**ARTERIES** . . . . . Basilar artery slightly atheromatous; other vessels of bases normal.  
**BRAIN** . . . . . Normal.  
**EARS** . . . . . No topi.

#### CHEST:

**LARYNX AND TRACHEA** . . . Extensive tuberculous ulceration below the vocal cords.  
**LUNGS** . . . . . *Right:* firmly adherent at apex; great thickening of pleura. Upper and middle lobes with several ragged cavities; much fibrous

increase and some recent tubercle. *Left*: adherent at apex and over middle lobe; lower part of upper lobe infiltrated with tubercle.

HEART . . . . . Weight, 12½ oz. Slight hypertrophy of left ventricle. Valves normal.

ABDOMEN:

PERITONEUM . . . . . Many firm adhesions.  
 STOMACH . . . . . Many minute ecchymoses on mucous surface.  
 INTESTINES . . . . . Adherent to one another.  
 LIVER . . . . . Much connective tissue increase.  
 SPLEEN . . . . . Weight, 10 oz. Capsule thickened.  
 PANCREAS . . . . . Normal.  
 ABDOMINAL LYMPHATICS . . . . . Not caseous.  
 KIDNEYS . . . . . Weight, 10 oz. Hard; granular on surface; cortex very narrow. No amyloid reaction in them or in any other organ.

URETERS AND BLADDER . . . . . Normal.

JOINTS . . . . . *Right side*: great-toe, phalangeal joint, no deposit; metatarso-phalangeal, no deposit. Knee, a deposit with erosion on the patella; much erosion with sprinkled deposit on the femur; eburnation and lipping of femur and of tibia; much erosion of tibia; no deposit on semilunar cartilages. *Left side*: great-toe, phalangeal joint, no deposit; metatarso-phalangeal, abundant deposit on both surfaces. Knee: erosion of femur, patella, and tibia; small specks of deposit visible on all.

No. 18.—HENRY B. 67.

EXTERNAL APPEARANCES. <sup>1</sup>/<sub>2</sub> . . . . . Lean; some anasarca of left leg, which had large varicose veins. No anasarca of right leg.

HEAD:

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER, }  
 ARTERIES, AND BRAIN . . . . . } Normal.  
 EYES . . . . . Normal.  
 EARS . . . . . No tophi.

CHEST:

LARYNX AND TRACHEA . . . . . Normal.  
 LUNGS . . . . . Some old adhesions on both sides. Emphysematous.  
 HEART . . . . . Aortic valves stiff, and with some calcified growths upon them, but not incompetent. Left ventricle hypertrophied. Weight, 14 oz.

ABDOMEN:

PERITONEUM AND STOMACH . . . . . Normal.  
 INTESTINES . . . . . { Some shallow (non-tuberculous) ulcers in large intestine, and one in ileum, near the valve.  
 LIVER . . . . . Showing some increase of connective tissue.  
 SPLEEN . . . . . Normal.  
 KIDNEYS . . . . . Granular on surface, with large cysts and very adherent capsule.

JOINTS . . . . . *Right side*: great-toe, phalangeal joint, no deposit; metatarso-phalangeal, abundant deposit, most on phalanx; deposit on both sesamoids. Knee, femur with lipping. Right condyle, a bare patch with deposit. Patella, a large bare patch in middle with deposit. Tibia and semilunar cartilage, no deposit. *Left side*: great-toe, metatarso-phalangeal joint, abundant deposit on both surfaces; most on phalanx. Knee, no deposit.

## No. 19.—GEORGE M. 63.

- EXTERNAL APPEARANCES . . . No anasarca.
- HEAD :
- CRANIAL BONES . . . . . Calvaria unusually thick.
- DURA MATER AND SINUSES . . . . . Firmly adherent to calvaria.
- ARACHNOID AND PIA MATER . . . . . Normal.
- ARTERIES . . . . . All at base of brain highly atheromatous.
- BRAIN . . . . . Four recent hæmorrhages : (1) into the pons Varolii ; (2) right optic thalamus ; (3) right corpus striatum, outside capsule ; (4) roof of right lateral ventricle.
- EARS . . . . . No tophi.
- CHEST :
- LARYNX AND TRACHEA . . . . . Normal.
- LUNGS . . . . . Emphysematous.
- HEART . . . . . Pericardium and valves normal ; left ventricle hypertrophied ; weight, 21 oz.
- ABDOMEN :
- PERITONEUM, STOMACH, AND INTESTINES . . . . . Normal.
- LIVER AND SPLEEN . . . . . Normal.
- KIDNEYS . . . . . Small ; capsule adherent ; a few small cysts ; cortex narrow.
- URETERS AND BLADDER . . . . . Normal.
- JOINTS . . . . . *Right side* : metatarsal bone of great-toe, proximal joint, no deposit ; distal, abundant ; phalanx of great-toe, abundant deposit on both articular surfaces ; deposit on sesamoid bones. Knee, patella, whole middle part abraded with specks of deposit on bone. Ankle, no deposit. *Left side* : knee, a similar abraded patch, with more specks of deposit than on the right side. Great-toe, deposit on both surfaces of metatarso-phalangeal joint. Crico-arytænoid joints, no deposit.

## No. 20.—JAMES S. 50.

- EXTERNAL APPEARANCES . . . Lean ; no anasarca.
- HEAD :
- CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER . . . Normal.
- ARTERIES . . . . . All highly atheromatous.
- BRAIN . . . . . A small hæmorrhage in the middle line below the iter.
- EARS . . . . . No tophi.
- CHEST :
- ÆSOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . . Normal.
- LUNGS . . . . . No adhesions ; emphysematous.
- HEART . . . . . Valves and pericardium normal ; left ventricle hypertrophied ; weight, 15 oz.
- AORTA . . . . . Highly atheromatous.
- ABDOMEN :
- PERITONEUM, STOMACH, INTESTINES . . . . . Normal.
- LIVER . . . . . With some increase of fibrous tissue and great fatty infiltration ; weight, 65 oz.
- SPLEEN . . . . . Small, normal.
- PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . . Normal.
- KIDNEYS . . . . . Capsule adherent ; surfaces rough ; cortex almost absent ; no cysts. On section some whitish cysts were visible in pyramids.
- URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.

**JOINTS** . . . . . *Right side:* great-toe, phalangeal, no deposit; metatarso-phalangeal, both surfaces, abundant deposit. Middle and internal cuneiform, both surfaces, abundant deposit. External cuneiform, scaphoid, and astragalus, deposits on all surfaces. Ankle, one speck on lower end of tibia. The ligaments of the foot in every part contained much urate of soda; none was seen in the fat. Knee, patella with some specks of deposit at edge, and a small roughened patch (in which no deposit was seen) in middle. One speck on femur, and a flattened patch (hardly erosion) on the outer condyle, with a corresponding patch on the head of the tibia, on which there was no deposit. Ring-finger, phalangeal joint, no deposit. *Left side:* great-toe, phalangeal, no deposit; metatarso-phalangeal, abundant deposit both surfaces. Middle and internal cuneiform, abundant deposit on both surfaces. Knee, patella, several specks; femur, tibia, no deposit. Crico-arytænoids, sterno-clavicular, no deposit. Ensiform cartilage, none.

**No. 21.—HENRY P. 52.**

**EXTERNAL APPEARANCES** . . Fairly nourished. No anasarca.

**HEAD :**

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER, } Normal.  
ARTERIES, AND BRAIN . . . . . }

**EARS** . . . . . No tophi.

**CHEST :**

ESOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . . Normal.

**LUNGS** . . . . . Right: firm adhesions organised; lowest lobe solidified; section granular; much purulent fluid exuding on pressure. Left: partially collapsed; covered with flakes of lymph.

**HEART** . . . . . Both surfaces of pericardium covered with a finely granular deposit of lymph. Valves normal.

**AORTA** . . . . . No calcification.

**ABDOMEN :**

PERITONEUM, STOMACH, INTESTINES . . . . . Normal.

**LIVER** . . . . . Engorged.

**SPLEEN** . . . . . Very soft.

**PANCREAS, ABDOMINAL LYMPHATICS, SUPRA RENALS** . . . . . Normal.

**KIDNEYS** . . . . . Of natural size; surface smooth; capsule of normal thickness, and not adherent; no cysts; cortex of natural width.

**URETERS, BLADDER, AND ORGANS OF GENERATION** . . . . . Normal.

**JOINTS** . . . . . *Right side:* great-toe, phalangeal, scanty deposit on both surfaces; metatarso-phalangeal, copious deposit on both surfaces; metatarso-cuneiform, no deposit. Knee, femur, deposit on intercondyloid groove and on both condyles, and abrasion on inner condyle. Patella, abundant deposit on edge, and specks elsewhere. Tibia, no deposit. *Left side:* great-toe, phalangeal, none; metatarso-phalangeal, abundant deposit; metatarso-cuneiform, no deposit. Crico-arytænoid joints and sterno-clavicular, none.

**No. 22.—ELIZABETH D. 34.**

**EXTERNAL APPEARANCES** . Lean. Slight anasarca of feet. Some superficial ulcers on dorsum of left foot.



**HEAD :**

ARTERIES . . . . .	Atheromatous.
BRAIN . . . . .	A small hæmorrhage in the pons one-eighth of an inch to right of the iter, and on its plane.
EARS . . . . .	No topi.

**CHEST :**

ESOPHAGUS . . . . .	Normal.
GLANDS OF NECK . . . . .	Normal. Fascia of neck, no deposit.
LARYNX AND TRACHEA . . . . .	Crico-arytænoid joints normal.
LUNGS . . . . .	Some collapse of both lungs. Scanty effusion in both pleural cavities, with a few shreds of lymph.
HEART . . . . .	Some lymph on surface of pericardium. Valves all normal. Great hypertrophy of left ventricle. Weight of heart, 19 oz.
AORTA AND VESSELS . . . . .	Not highly atheromatous.

**ABDOMEN :**

PERITONEUM . . . . .	No ascites.
STOMACH . . . . .	A small commencing gastric ulcer with a thrombus in its floor.
INTESTINES, LIVER, SPLEEN, PANCREAS, ABDOMINAL LYMPHATICS, } AND SUPRA RENALS . . . . .	Normal.
KIDNEYS . . . . .	

URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.

**JOINTS** . . . . . The following were opened, and urate of soda found (on those marked in italics see details below):—*Right side*: shoulder, elbow, knee, ankle, astragalus-scapoid, the three cuneiform, metatarsal, metatarso-phalangeal of great-toe, phalangeal of great-toe, metatarso-phalangeal of 2nd toe, metatarso-phalangeal of 3rd toe. *Left side*: sterno-clavicular, shoulder, elbow, knee, ankle, astragalo-scapoid, metatarso-phalangeal of great-toe, metatarso-phalangeal of second toe. There was a deposit in the fat about both knee-joints, and in the fascia and ligaments of the foot.

*Details as to joints.*—Sterno-clavicular, both sides, without erosion or deposit. *Right side*: phalangeal joint of great-toe normal; metatarso-phalangeal with extensive deposit in patches on the phalanx, sesamoid bone, and metatarsal bone; none in the fat about the joint. Metatarso-phalangeal, second toe, deposit on both surfaces. Knee: deposit on all bones and cartilages, viz.:—Femur, some degree of lipping of both edges; a large patch of erosion on the upper part of the outer condyle, with specks of deposit on the eroded part, and a patch of deposit beyond it on the smooth cartilage. Several specks on other parts, but no patches. No deposit or roughening in intercondyloid groove. Beyond the actually eroded part there was a line of what seemed commencing erosion of the cartilage. Patella extensively eroded with specks and small patches of deposit on and beyond the erosion, which erosion extends in a uniform manner from the centre of the bone. Tibia with several specks of deposit on both condyles, but no erosion. A few specks on the upper and many on the under surfaces of both semilunar cartilages. Some deposit in the fat about the joint. Cartilages entire. Ankle: tibia, fibula, and astragalus all copiously and almost uniformly covered by deposit; no erosion. All surfaces of astragalus were coated, so was the astragalo-calcaneal joint.

Foot: all surfaces of the scaphoid and of all the cuneiforms, and the metatarsal bone of the great-toe at its proximal end were coated, and there was some deposit in all the fascia and ligaments of the foot. Shoulder: on head of humerus in the cartilage, a little below the surface, there was a speck of urate of soda; no erosion. Elbow: no erosion. Deposit on all bones, viz., humerus, a fine linear deposit on the outer and inner edge of the inner condyle, with a less degree on the outer condyle; ulna, a fine deposit on the edges and median ridge of the articular surface; radius, some specks on the ulnar articular surface, and a collection of specks at one point in the hollow of the head of the bone. Some lipping about the ulnar articular surface. *Left side:* the joints examined (see above) were almost an exact counterpart of those on the right side, except that on the end of the femur, while the erosion was similar, there was less urate of soda.

**No. 23.—EDWARD T. 47.**

- EXTERNAL APPEARANCES . . . Fairly nourished. Dense general anasarca.
- HEAD:
- |   |           |
|---|-----------|
| CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER, ARTERIES, AND BRAIN . . . . . | } Normal. |
| EARS . . . . .  |           |
- No tophi.
- CHEST:
- |  |  |
|--|--|
| ŒSOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . . | Normal.  |
| LUNGS . . . . .  | Highly emphysematous. Some long string-like organised adhesions on both sides.     |
| HEART . . . . .  | Pericardium and valves normal. Some hypertrophy of both ventricles. Weight, 17 oz. |
| AORTA . . . . .  | Only slightly atheromatous.  |
- ABDOMEN:
- |  |   |
|--|---|
| PERITONEUM . . . . .                                       | Some ascites.   |
| STOMACH AND INTESTINES . . . . .                           | Normal.   |
| LIVER . . . . .  | Surface slightly uneven, with general thickening of capsule. Tissue very firm. Size diminished.     |
| SPLEEN . . . . .   | Slightly enlarged; tissue very dense.   |
| PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . . | Normal.   |
| KIDNEYS . . . . .  | Weight, 10 oz. Hard; surface granular; capsule very thick and adherent; cortex diminished in width. |
- URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.
- JOINTS . . . . . *Right side:* knee, femur, erosion and gelatinous swelling; on inner condyle (swelling only) and in intercondyloid groove, tibia, patch of erosion in middle of each surface, and a small patch on the edge of the inner surface (O size). Semilunar cartilage, none. Patella, gelatinous degeneration on highest middle point of ridge, extending one-third inch into each surface. Slight lipping at lower edge of articular surface of patella. Great-toe, erosion in deepest part of articular cavity of phalanx and at edges of articular surface of metatarsal. *Left side:* knee, femur, erosion in intercondyloid groove with degeneration. Piece cut out for microscopic examination. Patella, large patch of erosion on outer surface, close to median ridge, with one distinct speck of urate of soda. Ankle, internal cuneiform, both surfaces of distal side covered with urate of soda. No erosion; no swelling; surface quite smooth; proximal surface quite normal. First metatarsal, abundant deposit of urate of soda on both ends; quite uniform; the surfaces smooth. Both sesamoids and synovial membrane round it covered with a uniform

deposit. First phalanx, abundant deposit uniformly distributed; over concave articular surface; surface uneven. Distal surface, three minute swellings on inner surface of joint.

### No. 24.—SAMUEL R. 41.

EXTERNAL APPEARANCES . . . Fairly nourished.

#### HEAD :

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER . . Normal.

ARTERIES . . . . . Slightly atheromatous.

BRAIN . . . . . A hæmorrhage on the right side, destroying the whole outer part of the corpus striatum and optic thalamus, and extending just within the inner capsule. Three small hæmorrhages into the pons. On left side, a cavity of an old hæmorrhage, lined with a yellowish membrane, and containing a little clear fluid, in outer part of corpus striatum and optic thalamus at their junction.

EARS . . . . . No topi.

#### CHEST :

ESOPHAGUS AND GLANDS OF NECK . . . . . Normal.

LARYNX AND TRACHEA . . . Thyroid cartilage much calcified.

LUNGS . . . . . At apex of left, a cavity filled with gritty and caseous material, and about half an inch in diameter.

HEART . . . . . Pericardium and valves normal; left ventricle hypertrophied. Weight, 15 oz.

AORTA . . . . . Highly atheromatous.

#### ABDOMEN :

PERITONEUM, STOMACH, INTESTINES, LIVER, SPLEEN, PANCREAS, } Normal.  
ABDOMINAL LYMPHATICS, SUPRA RENALS . . . . . }

KIDNEYS . . . . . Weight, 9 oz. Capsule firmly adherent. Surface granular, with cysts. Cortex much diminished in width. A few gritty streaks in the pyramids of both kidneys.

URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.

JOINTS . . . . . Many with urate of soda and eroded cartilage.

*Right side:* great-toe phalangeal joint, no deposit; metatarso-phalangeal, phalanx, a fine punctiform deposit of urate of soda round edge and in middle of articular concavity; no erosion; abundant deposit on both sesamoid bones; metatarsal, abundant deposit on surface and at inferior edge; both sesamoid bones with deposit; slight lipping at edge; no erosion. Metatarso-cuneiform joint, metatarsal I., abundant almost uniform deposit. Cuneiform's distal surface, abundant deposit, no erosion. Proximal surface, two solitary specks of deposit; no erosion. Astragalus, no deposit or erosion on any surface. Ankle, tibia and fibula, no deposit or erosion. Second toe, metatarso-phalangeal joint, no deposit. No deposit in the dorsal ligaments of foot or in fat. Knee, abundant splashed deposit on upper surface of tibia and on both surfaces of semilunar cartilages. No erosion, no deposit on crucial ligaments. Femur, a great erosion on the upper part, extending from the intercondyloid groove on the outer condyle. At the edge of this, on it, and elsewhere on the articular end, were numerous specks of urate of soda. Patella, no erosion and no lipping. Specks and blotches of urate of soda on both sides, with a trace of lipping at the edge, and little pits in the cartilage as of commencing erosion. Elbow, no deposit on any of the bones. In the middle of the articular surface of the olecranon a deep groove, as of discon-

tinuity of cartilage. *Left side:* great-toe, phalanx, no deposit on distal surface; proximal, abundant; fine deposit on edges and middle of cup; metatarsal, abundant deposit. No erosion on either surface of metatarso-phalangeal joint. Knee with deposit as on right side, but less in quantity. Hip, no deposit on femur or abrasion. Scanty deposit on inner semilunar cartilage, and abundant deposit on outer cartilage, with some erosion. An opaque speck in centre of each costal cartilage.

*Microscopical examination.*—Costal cartilages, no urate of soda present.

**No. 25.—JOSEPH S. 43.**

EXTERNAL APPEARANCES . . . Lean; slight anasarca of legs.

HEAD:

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER, } Normal.  
ARTERIES, AND BRAIN. . . . . }

EARS . . . . . No topi.

CHEST: . . . . . Costal cartilages rather hard, but not calcified.

ŒSOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA. . . . . Normal.

LUNGS . . . . . Some recent lymph on surface of right; some old adhesions on left side.

HEART . . . . . Pericardium and valves normal. Weight, 12 oz. Slight hypertrophy of left ventricle.

AORTA . . . . . Somewhat atheromatous.

ABDOMEN:

PERITONEUM, STOMACH, AND INTESTINES . . . . . Normal.

LIVER . . . . . Some obstruction of ductus communis, owing to pressure by the abscess of pancreas.

SPLEEN . . . . . Normal.

PANCREAS . . . . . A large abscess in the head, filled with pus.

KIDNEYS. . . . . Capsule adherent; granular on surface; no cysts. Not diminished in size.

URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.

JOINTS . . . . . Many with deposit. *Left side:* knee, femur, abundant deposit all over; no erosion. Patella, superficial deposit, with also deep deposit below surface, and not appearing on it, and slight degeneration with commencing erosion. Great-toe, deposit in metatarso-phalangeal joint. *Right side:* great-toe, metatarso-phalangeal with deposit; phalangeal, no deposit.

**No. 26.—JAMES S. 59.**

EXTERNAL APPEARANCES . . . Fat.

HEAD:

CRANIAL BONES . . . . . Normal.

DURA MATER AND SINUSES . . . . . More firmly adherent to calvaria than natural.

ARACHNOID AND PIA MATER . . . . . Normal.

ARTERIES . . . . . All atheromatous.

BRAIN . . . . . Normal.

EARS . . . . . No topi.

CHEST: . . . . . Costal cartilages partly calcified.

ŒSOPHAGUS AND GLANDS OF NECK . . . . . Normal.

LARYNX AND TRACHEA . . . . . Upper opening closed by œdema of aryæno-epiglottidean folds; joints normal.

LUNGS . . . . . Large fluid effusion, with collapse of lung on right side; a smaller effusion on left side.



HEART . . . . .	Pericardium and valves normal; weight, 23 oz.; great hypertrophy of left ventricle.
AORTA . . . . .	Atheromatous.
ABDOMEN:	
PERITONEUM . . . . .	Some ascites.
STOMACH AND INTESTINES . . . . .	Normal.
LIVER. . . . .	Small; hard, with uneven surface.
SPLEEN . . . . .	Very hard; not enlarged.
PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . .	Normal.
KIDNEYS. . . . .	Very hard; capsule adherent; surface granular, with a few small cysts.
URETERS, BLADDER, AND ORGANS OF GENERATION . . . . .	Normal.
JOINTS . . . . .	<i>Right side:</i> knee, a great patch of complete erosion of cartilage on outer condyle of femur. The eroded surface is polished and eburnated. At the whole of the outer edge of the condyle there is massive lipping. All along the edge of the eroded patch in the cartilage there is an abundant deposit of urate of soda. The intercondyloid groove shows some degeneration. The upper edge and inner edge also show well-marked lipping. On the inner condyle are a few minute specks of urate of soda. The lower edge of the inner condyle showed a slight degree of lipping. Patella, an eburnated patch corresponding to that on the femur, equally polished and hard. Abundant deposit of urate of soda round its edge. General degeneration of the remaining cartilage on the patella. Tibia, abundant deposit on both semilunar cartilages. Metatarso-phalangeal, abundant deposit on phalanx, and metatarso-phalangeal joint none. Metatarsal-cuneiform none. Sesamoids and capsular joints with abundant deposit. <i>Left side:</i> knee with slight degree of lipping. On inner condyle, near the lipped part, a patch on surface of urate of soda of considerable thickness. Patella with much urate of soda in several patches and some degeneration; no erosion. Tibia with abundant deposit on end and on semilunar cartilage. Tibio-fibular joint free from erosion and deposit. Toe: phalanx with slight, deep, and superficial deposit all round edge of cup; two small patches of commencing erosion. Metatarsal bone, none. Phalangeal joint, none.

## No. 27.—JOSEPH M. 72.

EXTERNAL APPEARANCES . . . . .	Fat; no anasarca.
HEAD:	
CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER, ARTERIES, AND BRAIN . . . . .	} Normal.
EARS . . . . .	
NO TOPHI.	
CHEST: . . . . .	Costal cartilages calcified.
ŒSOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . .	Normal
LUNGS . . . . .	Showing general emphysema; some organised adhesions on both sides.
HEART . . . . .	Weight, 16 oz. Pericardium and valves normal; left ventricle hypertrophied.
AORTA AND VESSELS . . . . .	With numerous atheromatous patches, but no calcification.
ABDOMEN? . . . . .	Extensive extravasations of blood in lower part of abdominal wall, apparently due to external injury; external surface of bruised appearance.
PERITONEUM, STOMACH, AND INTESTINES . . . . .	Normal.
LIVER . . . . .	Weight, 70 oz.; large, infiltrated with fat.
SPLEEN, PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . .	Normal.

KIDNEYS . . . . . Large, surface smooth ; no cysts.  
 URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.  
 JOINTS . . . . . Much abrasion and degeneration of cartilage  
 in knees, with very scanty deposit. Extensive deposit in toes. The  
 right fore-finger metacarpo-phalangeal joint was swollen externally,  
 and on being opened showed urate of soda on both surfaces.

**No. 28.—CONCHOBHAR H. 44.**

EXTERNAL APPEARANCES . . Well nourished ; slightly jaundiced.

**HEAD :**

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER, } Normal.  
 ARTERIES, AND BRAIN . . . . . }  
 EARS . . . . . No tophi.

**CHEST :**

ESOPHAGUS AND GLANDS OF NECK . . . . . Normal.  
 LARYNX AND TRACHEA . . . No deposit in joints or cartilages.  
 LUNGS . . . . . *Left*: lower lobe solid, red, airless, pleural  
 surface coated with lymph ; *Right*:  
 normal.  
 HEART . . . . . Normal.  
 AORTA . . . . . With only a few patches of atheroma ; no  
 calcification.

**ABDOMEN :**

PERITONEUM, STOMACH, AND INTESTINES . . . . . Normal.  
 LIVER . . . . . Large and fatty.  
 SPLEEN . . . . . Enlarged.  
 PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . Normal.  
 KIDNEYS . . . . . Large and full of blood ; no cysts ; no ad-  
 hesion of capsule.  
 URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.  
 JOINTS . . . . . Both knees with gelatiniform change in the  
 cartilage of femora and patellæ, but without any urate of soda.  
 Great-toes, metatarso-phalangeal joints of both showing an abun-  
 dant deposit of urate of soda in their cartilages.

**No. 29.—JOSEPH C.**

EXTERNAL APPEARANCES . . Fat ; no anasarca.

**HEAD :**

CRANIAL BONES . . . Calvaria very thick ; on inner surface of left  
 frontal bone a raised corrugated process,  
 probably a node.  
 DURA MATER, SINUSES, ARACHNOID, PIA MATER, ARTERIES, BRAIN . Normal.  
 EARS . . . . . No tophi.

**CHEST :**

. . . . . Costal cartilages all calcified.  
 ESOPHAGUS AND GLANDS OF NECK . . . . . Normal.  
 LARYNX AND TRACHEA . . . Crico-arytænoid joints normal.  
 LUNGS . . . . . *Right*: normal. *Left*: a gangrenous patch in  
 lower part of upper lobe as large as a  
 Tangerine orange, and fluid in the middle.  
 HEART . . . . . Pericardium, normal ; a small growth on the  
 edge of the mitral valve ; weight, 13 oz.  
 AORTA . . . . . With a few atheromatous patches, but no  
 calcification.

**ABDOMEN :**

. . . . . Very fat.  
 PERITONEUM, STOMACH, AND INTESTINES . . . . . Normal.

LIVER . . . . .	Weight, 104 oz. ; large ; apparently infiltrated with fat and with connective tissue increase as well.
SPLEEN . . . . .	Weight, 20 oz. ; very large and firm.
PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . .	Normal.
KIDNEYS . . . . .	Large and firm ; weight, 18 oz. ; capsule not adherent ; no deposit visible in tubuli.
URETERS, BLADDER, AND ORGANS OF GENERATION . . . . .	Normal.
JOINTS . . . . .	Deposit of urate of soda in several. <i>Right side</i> : elbow normal. Index-finger, metacarpo-phalangeal, normal. Knee, patella, on each side of median ridge a patch of soft, rough, degenerate cartilage, with some large distinct specks of urate of soda in one patch, and in the other a small but distinct speck. Femur, a patch one-fourth of an inch wide in the intercondylar groove, and another on the upper part of the outer condyle. In both, but most in that on the condyle, deposits of urate of soda. Abundant deposit on tibia. Some deposit also on base of anterior crucial ligament, on head of tibia, and on semilunar cartilages. Great-toe, phalangeal joint, normal. Metatarso-phalangeal, thick deposit on base of articular concavity ; much abrasion on inner side of metatarsal bone, with some deposit in patches of urate of soda ; other end of metatarsal none ; sesamoid bones with abundant deposit, and in the ligaments ; scaphoid, no deposit (distal surface) ; sterno-clavicular joint, none. <i>Left side</i> : knee, femur, slight swelling and roughness in intercondyloid groove ; no deposit visible. Condyles, none. Patella, whole middle part roughened ; no deposit. Semilunar cartilage and tibia, none. Great-toe, phalangeal joint, none. Metatarso-phalangeal, articular concavity of phalanx with small but distinct superficial deposit and abrasion, and with a large opaque patch caused by a deposit of urate of soda in the substance of the cartilage.

## No. 30.—CHARLES E. 43.

EXTERNAL APPEARANCES . . . . .	Lean ; legs anasarous.
HEAD :	
CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER, } ARTERIES, AND BRAIN . . . . .	} Normal.
EARS . . . . .	
CHEST :	Barrel-shaped.
ESOPHAGUS AND GLANDS OF NECK . . . . .	Normal
LUNGS . . . . .	No pleural adhesions ; emphysematous.
HEART . . . . .	Of wasted appearance.
AORTA . . . . .	With a few atheromatous patches.
ABDOMEN :	All viscera matted together by adhesions.
PERITONEUM . . . . .	Universally thickened ; foramen of Winslow closed by adhesions.
STOMACH AND INTESTINES . . . . .	Mucous surface normal.
LIVER . . . . .	Small, very hard, surface roughened, capsule very thick ; ducts free. On microscopic examination well-marked cirrhosis was discovered, with great atrophy of liver cells.
SPLEEN . . . . .	Slightly enlarged.
PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . .	Normal.
KIDNEYS . . . . .	Of normal size, some cysts on surface, capsule somewhat adherent and thick ; cortex of normal width.
URETERS, BLADDER, AND ORGANS OF GENERATION . . . . .	Normal.

**JOINTS** . . . . . *Right side:* elbow normal; degenerate patches in both great-toes. Urate of soda in both knees. Knee, less affected than the left, with small patch of erosion on inner condyle, with deposit (not superficial) near it. Patella, no deposit. *Left side:* knee, femur, with a well-marked superficial deposit on upper part of inner condyle. On lower part of outer condyle a patch of degeneration and erosion, with some deposit beneath the surface. On lower part of inner condyle some deep deposit in the cartilage. Patella, a thick patch of deposit at upper outer edge; a patch of erosion from middle inwards, with deep degeneration and a good deal of deep and some superficial deposit. No lipping. Great-toe, phalangeal joint, none. Metatarso-phalangeal, some ankylosis; much erosion, the bone quite bare in parts, and a thick deposit of urate of soda, thickest at edges, but in the middle also. Metatarsal surface with abundant deposit. Cuneiform surface normal.

**No. 31.—JAMES S. 46.**

**EXTERNAL APPEARANCES** . . . . . No anasarca.

**HEAD:**

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER, } Normal.  
ARTERIES, AND BRAIN . . . . . }

**EARS** . . . . . No topi.

**CHEST:**

ESOPHAGUS . . . . . Normal.

LARYNX AND TRACHEA . . . . . Normal.

LUNGS . . . . . Much engorged (very putrid).

HEART . . . . . Pericardium and valves normal; weight, 13 oz.; some hypertrophy of left ventricle.

AORTA . . . . . Slightly atheromatous.

**ABDOMEN:**

LIVER . . . . . Much fatty infiltration.

SPLEEN . . . . . Very soft and large; weight, 22 oz.

KIDNEYS . . . . . Surface granular; capsule adherent.

**JOINTS** . . . . . Metatarso-phalangeal joints of both great-toes partially ankylosed with urate of soda on line of articular surface. Phalangeal joint of left great-toe normal. Right knee, some erosion of cartilage and one speck of urate of soda. Left knee, abundant deposit of urate of soda.

**No. 32.—SAMUEL M. 36.**

**EXTERNAL APPEARANCES** . . . . . Well nourished; no anasarca.

**HEAD:**

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER . . . . . Normal.

BRAIN . . . . . A large hæmorrhage present.

EARS . . . . . No topi.

**CHEST:**

LUNGS . . . . . First pair of costal cartilages (only) calcified.

HEART . . . . . One organised adhesion on right side; both somewhat engorged.

HEART . . . . . Weight, 22 oz.; pericardium and valves normal; great hypertrophy of left ventricle.

AORTA . . . . . No atheroma.

**ABDOMEN:**

PERITONEUM, STOMACH, AND INTESTINES . . . . . Normal.

LIVER . . . . . Large and engorged.

SPLEEN, PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . . Normal.

KIDNEYS . . . . . Granular, but not very small.



URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.  
 JOINTS . . . . . Both great-toes, metatarso-phalangeal joint, abundant deposit; no erosion. Phalangeal joints, no deposit. Second toe (right side), metatarso-phalangeal joint, no deposit or erosion. The proximal metatarsal joint, no deposit or erosion. Right knee, femur, across intercondyloid groove, extending into each condyle, a broad patch of degenerate cartilage. Some lipping at edge of femur. Small patch of erosion in middle of patella.

### No. 33.—WILLIAM S. 52.

EXTERNAL APPEARANCES . . No anasarca.

#### HEAD :

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER, } Normal.  
 ARTERIES, AND BRAIN. . . . . }  
 EARS . . . . . No topi.

#### CHEST :

LUNGS . . . . . Emphysematous.  
 HEART . . . . . Pericardium distended with turbid fluid; weight, 12 oz. Valves normal.  
 AORTA . . . . . Atheromatous.

#### ABDOMEN :

PERITONEUM, STOMACH, AND INTESTINES . . . . . Normal.  
 LIVER . . . . . With some increase of connective tissue.  
 SPLEEN . . . . . Slightly enlarged.  
 PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . Normal.  
 KIDNEYS . . . . . Small; surface rough; capsule adherent; visible deposit of urates in tubules.

URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.  
 JOINTS . . . . . Many with deposits of urate of soda. *Right side*: knee, some deposit, most on tibia. Abundant on both semi-lunar cartilages. Hip, none. Great-toe, abundant on phalangeal articular surface of metatarso-phalangeal joint. Scaphoid, abundant deposit on astragaloid surface. Astragalus, abundant deposit on both surfaces. Right patella, rough, but no deposit. *Left*: rough, and some deposit. Left internal cuneiform and corresponding first metatarsal, abundant deposit.

### No. 34.—ALFRED W. 61.

EXTERNAL APPEARANCES . . Lean; legs anasarca; some superficial ulcers on dorsum of left foot.

#### HEAD :

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER . Normal.  
 ARTERIES . . . . . Highly atheromatous.  
 BRAIN . . . . . Normal.  
 EARS . . . . . No topi.

CHEST : . . . . . No deposit of urate of soda visible in the costal cartilages.

ESOPHAGUS . . . . . Normal.  
 GLANDS OF NECK . . . . Normal; fascia of neck normal.  
 LARYNX AND TRACHEA . . Normal.  
 LUNGS . . . . . Highly emphysematous.  
 HEART . . . . . Hypertrophy of left ventricle. Valves normal. Aortic valves slightly thickened; coronary arteries highly atheromatous.  
 AORTA AND VESSELS . . . Not highly atheromatous.

ABDOMEN: . . . . . Little fat in omentum.  
 PERITONEUM AND STOMACH . . Normal.  
 INTESTINES AND LIVER . . Normal; ducts free.  
 SPLEEN, PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . Normal.  
 KIDNEYS . . . . . Very small; capsule adherent and surface granular; cortex narrow.  
 URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.  
 JOINTS . . . . . Abundant deposit of urate of soda on both surfaces of metatarso-phalangeal joint of both great-toes.

**No. 35.—ALFRED A. 61.**

EXTERNAL APPEARANCES . . Fairly nourished.  
 HEAD:  
 CRANIAL BONES . . . . . Very thick.  
 DURA MATER, SINUSES, ARACHNOID, PIA MATER . . . . . Normal.  
 ARTERIES . . . . . Atheromatous.  
 BRAIN . . . . . Normal.  
 EARS . . . . . No topi.  
 CHEST:  
 LARYNX AND TRACHEA . . . Normal.  
 LUNGS . . . . . Normal.  
 HEART . . . . . Left ventricle hypertrophied; aortic valves thickened.  
 ABDOMEN:  
 PERITONEUM, STOMACH, INTESTINES, LIVER, SPLEEN, PANCREAS, } Normal.  
 ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . . }  
 KIDNEYS . . . . . Small; capsule adherent; surface granular; cortex narrow.  
 URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.  
 JOINTS . . . . . Abundant deposit of urate of soda in both great-toes (metatarso-phalangeal joint).  
 No deposit and no degeneration of cartilage in knees.

**No. 36.—WILLIAM C. 64.**

EXTERNAL APPEARANCES . . Lean; no anasarca. Arms much tattooed.  
 HEAD:  
 CRANIAL BONES . . . . . Calvaria thicker than normal.  
 DURA MATER . . . . . Firmly adherent to calvaria.  
 ARACHNOID AND PIA MATER . Normal.  
 ARTERIES . . . . . Both middle cerebral and basilar highly atheromatous; vena Galeni with atheromatous patches.  
 BRAIN . . . . . Normal.  
 EARS . . . . . No topi.  
 CHEST: . . . . . Barrel-shaped; costal cartilages calcified.  
 ESOPHAGUS . . . . . Normal.  
 GLANDS OF NECK . . . . . Normal. Some of the axillary glands contained pigment.  
 LARYNX . . . . . Cartilages calcified; otherwise normal.  
 LUNGS; . . . . . Highly emphysematous. No very large bullæ.  
 Much pigmented.  
 HEART . . . . . Pericardium normal. Weight, 10 oz. Endocardium, one cord of the mitral valve thickened. One large and several small growths on edge of valve.

AORTA AND VESSELS . . .	Atheromatous. Pulmonary artery atheromatous.
ABDOMEN: . . . . .	Puffed out.
PERITONEUM . . . . .	With lymph on every part.
STOMACH . . . . .	The pyloric third occupied by new growth; cardiac end projecting as a distinct tumour forwards.
INTESTINES . . . . .	Small intestine much pigmented.
LIVER . . . . .	With slight invasion by the new growth where in contact with it.
SPLEEN . . . . .	Slightly enlarged; not infiltrated; weight, 8½ oz.
PANCREAS . . . . .	Much infiltrated with whitish new growth.
ABDOMINAL LYMPHATICS . .	Not infiltrated in mesentery.
SUPRA RENALS . . . . .	Normal.
KIDNEYS . . . . .	Granular, with cysts; small, pale. Capsule adherent; cortex narrow.
URETERS, BLADDER, AND ORGANS OF GENERATION . . . . .	Normal.
JOINTS . . . . .	<i>Right side:</i> great-toe with erosion and deposit of urate of soda on phalanx and metatarsal. Knee with lipping and erosion of edge of outer condyle; some erosion in groove, and a small patch on inner condyle. No deposit. Semilunar cartilages and tibia, none. Index, metacarpo-phalangeal joint, no erosion, no deposit. <i>Left side:</i> great-toe with slight erosion, and large specks of deposit of urate of soda on both surfaces of metatarso-phalangeal joint; the specks near the edge of the sesamoid bone. Ankle, neither erosion nor deposit. Knee, no deposit; changes more extensive than on right side, but of the same character and precise locality. On the middle of each patella an abraded patch, deepest and largest on the left patella.

## No. 37.—RICHARD A. 28.

EXTERNAL APPEARANCES . .	Well-nourished. No anasarca. Much blood about nose and mouth.
HEAD:	
CRANIAL BONES . . . . .	Normal.
DURA MATER AND SINUSES .	Thick and adherent.
ARACHNOID, PIA MATER, AND ARTERIES . . . . .	With some slight opacities.
BRAIN . . . . .	On the left side, in front of, and involving the anterior part of the corpus striatum, a large hæmorrhage which had penetrated the left lateral ventricle.
EARS . . . . .	Both normal.
CHEST:	
ESOPHAGUS, GLANDS OF NECK, LARYNX, TRACHEA, AND LUNGS . .	Normal.
HEART . . . . .	Pericardium and endocardium normal. Weight, 15 oz.
AORTA AND VESSELS . . . .	Atheromatous.
ABDOMEN:	
STOMACH, INTESTINES, AND LIVER .	Normal.
SPLEEN, PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS .	Normal.
KIDNEYS . . . . .	One cyst; granular; capsule adherent. Not small.
URETERS, BLADDER, AND ORGANS OF GENERATION . . . . .	Normal.
JOINTS . . . . .	Abundant deposit in both great-toes (metatarso-phalangeal joint); not in the phalangeal joint. Some deposit and slight erosion in both knees.

**No. 38.—SAMUEL D. 63.**

- EXTERNAL APPEARANCES . . Fat; no anasarca; swellings with obvious deposits in several joints.
- HEAD:
- CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER . Normal.
- ARTERIES . . . . . Several patches of atheroma.
- BRAIN . . . . . Normal.
- EARS . . . . . No tophi projecting on surface, but on section a white speck in ear proved to be of urate of soda.
- CHEST: . . . . . Costal cartilages calcified. Sterno-clavicular joints, no deposit in either.
- ESOPHAGUS AND GLANDS OF NECK . . . . . Normal.
- LARYNX AND TRACHEA . . . . . No deposit in laryngeal joints.
- LUNGS . . . . . Somewhat engorged; emphysematous.
- HEART . . . . . Weight, 18 oz.; left ventricle hypertrophied; valves normal.
- AORTA AND VESSELS . . . . . Immediately above the aortic valves was a small aneurysmal bulging.
- ABDOMEN:
- PERITONEUM . . . . . No peritonitis.
- STOMACH AND INTESTINES . . . . . Normal.
- LIVER . . . . . Surface somewhat roughened. Gall-bladder normal. Substance tough.
- SPLEEN, PANCREAS, AND ABDOMINAL LYMPHATICS . . . . . Normal.
- SUPRA RENALS . . . . . None found on left side; right normal.
- KIDNEYS . . . . . Granular. Right in normal position. Left between the common iliac arteries and under the promontory of the sacrum. Its artery came off between the common iliac arteries. Deposits of urate of soda in both arteries.
- URETERS AND BLADDER . . . . . Bladder normal.
- ORGANS OF GENERATION . . . . . No scars.
- JOINTS . . . . . Deposit in many. Both great-toes with large bulgings of urate of soda. Second toe on each side same. *Right side:* third toe same. Fourth and fifth toe, none. Hand: index on each side with great bulging deposit at metacarpo-phalangeal joint and all phalangeal joints. Middle finger same. Deposits in little and ring fingers, same both sides. Abundant deposits both sides on os calcis, astragalus, and scaphoid, except on tibial surface of astragalus and astragaloid surface of tibia, which were natural. Both knees, lipping of edges of femur, and deposit in patches at edge. Deposit and much degeneration on both patellæ. Deposit on end of tibia and on semilunar cartilages. No deposit on left elbow and shoulder. Right hip-joint, no deposit.

**No. 39.—MAIRE N. 50.**

- EXTERNAL APPEARANCES . . Great general anasarca.
- HEAD:¹
- CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER . Normal.
- ARTERIES . . . . . Slightly atheromatous.
- BRAIN . . . . . Normal.
- EARS . . . . . Tophi in left tragus.



CHEST: . . . . .	Costal cartilages calcified.
ESOPHAGUS AND GLANDS OF NECK . . . . .	Normal.
LARYNX AND TRACHEA . . . . .	No deposit in joints.
LUNGS . . . . .	Emphysematous and œdematous. A good deal of fluid in both pleural cavities.
HEART . . . . .	Pericardium and endocardium normal; valves normal. Great hypertrophy of left ventricle. Weight, 17½ oz.
AORTA AND VESSELS . . . . .	Atheromatous.
ABDOMEN: . . . . .	Much distended.
PERITONEUM . . . . .	Great ascites.
STOMACH AND INTESTINES . . . . .	Normal.
LIVER . . . . .	A large cyst projected under the ensiform cartilage in the middle line. It extended from the upper to the lower edge of the liver, leaving at the lower edge a fringe of about one inch in width of liver tissue. The outer cyst wall was dense. The cyst contained a great many daughter and grand-daughter cysts, and a good deal of quite clear fluid. There was no caseation. The cyst was as large as the head of a child at birth.
SPLEEN . . . . .	Slightly enlarged; firm.
PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . .	Normal.
KIDNEYS . . . . .	Very small; granular; capsule adherent; many cysts present.
URETERS, BLADDER, AND ORGANS OF GENERATION . . . . .	Normal.
JOINTS . . . . .	Some degeneration on all surfaces of knee; no deposit. Great-toes: splashes of deposit at edges of both and on both metatarsal and phalangeal joints. No swelling or chalk-stones in hands.

#### ! No. 40.—JOHN G. 39.

EXTERNAL APPEARANCES . . . . .	Fairly nourished; no anasarca; some pigmented scars on both shins.
HEAD:	
CRANIAL BONES . . . . .	Normal.
BRAIN . . . . .	Over descending parietal convolution there was a rupture of a meningeal vessel visible with a magnifying-glass and above this there was on the left side, just outside line of junction of corpus striatum and of optic thalamus, a large firm clot under the dura mater, but not attached to it; on the left side was a cavity with firm walls of hazel-nut size, and lined by a thin yellowish membrane in outer part of optic thalamus; it contained no fluid.
SPINAL CORD . . . . .	Normal.
EARS . . . . .	Small tophus in right; a piece of left ear gone.
CHEST:	
ESOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . .	Normal.
LUNGS . . . . .	Emphysematous.
HEART . . . . .	Slight hypertrophy of left ventricle.
AORTA AND VESSELS . . . . .	Not markedly atheromatous.
ABDOMEN:	
PERITONEUM, STOMACH, INTESTINES, AND LIVER . . . . .	Normal; ducts free.
SPLEEN, PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . .	Normal.
KIDNEYS . . . . .	Granular, with many deposits of urate of soda in the tubules; small.
URETERS, BLADDER, AND ORGANS OF GENERATION . . . . .	Normal.
JOINTS . . . . .	Deposit on right great-toe with erosion.

No. 41.—JAMES M. 41.

EXTERNAL APPEARANCES . . .] Lean; no anasarca.

HEAD :

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER . . Normal.

ARTERIES . . . . . A large aneurysm of basilar artery; a small one of the left middle cerebral.

BRAIN . . . . . On the right side a large patch of softening with some recent clot, beginning at the groove between optic thalamus and corpus striatum, and extending outwards towards the cortex.

EARS . . . . . No topi.

CHEST: . . . . . Costal cartilages calcified.

ESOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . . Normal.

LUNGS . . . . . Emphysematous.

HEART . . . . . Pericardium and valves normal; weight, 11½ oz.; slight increase in thickness of both ventricles.

AORTA AND VESSELS . . .] Atheromatous.

ABDOMEN :

PERITONEUM, STOMACH, AND INTESTINES . . . . . Normal.

LIVER . . . . . With some increase of fibrous tissue.

SPLEEN, PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . Normal.

KIDNEYS . . . . . Small, granular; a deposit of urate of soda visible in pyramids; capsule adherent; no cysts.

URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.

JOINTS . . . . . Deposit in many; no erosion. *Right great-toe*, both surfaces of both joints with abundant deposit. Sesamoid bone with abundant deposit on both sides. No deposit on metatarsal face of metatarsal bone. None on ankle; none on astragalus. *Left foot*, somewhat more deposit, otherwise as right. *Knee, right*: with a single speck of deposit in substance of cartilage in intercondyloid groove, and a similar speck in middle of patella. A good deal of fibrillation over the patella. None on semilunar cartilage or on tibia. *Knee, left*: scattered but rather scanty deposit over whole surface of tibia, femur, semilunar cartilages, and patella. A distinct line along ridge of patella. No erosion; no lipping. *Right elbow*, no deposit; no erosion.

No. 42.—ELIZA L. 45. ♀

EXTERNAL APPEARANCES . . . Very fat; 2 inches of fat over abdomen; no anasarca.

HEAD :

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER . . Normal.

ARTERIES . . . . . Not atheromatous.

BRAIN . . . . . Normal; weight, 45 oz. !

EARS . . . . . No topi.

CHEST: . . . . . Narrow, and with a transverse constriction.

ESOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . . Normal.

LUNGS . . . . . Some thin organised adhesions at lower third of base of each lung; a little granular lymph at base of left lung.

HEART . . . . . Weight, 13½ oz.; pericardium, a general deposit of soft granular lymph, with a scanty liquid effusion; slight hypertrophy of both

	ventricles. Endocardium. Mitral valve thickened, and many patches of thickening elsewhere in left ventricle.
AORTA AND VESSELS . . . .	Not at all calcified.
ABDOMEN: . . . . .	Much fat.
PERITONEUM, STOMACH, AND INTESTINES . . . . .	Normal.
LIVER . . . . .	Somewhat fatty; weight, 60 oz.
SPLEEN . . . . .	Small capsule, much thickened in parts, and adherent to diaphragm; weight, 6 oz.
PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . .	Normal.
KIDNEYS . . . . .	Some cysts on surface; pelvis dilated; weight, 8 oz.; cortex slightly narrowed; surface slightly granular.
URETERS AND BLADDER . . . .	Not dilated; normal.
ORGANS OF GENERATION . . .	Normal.
JOINTS . . . . .	<i>Right side:</i> index-finger, metacarpo-phalangeal joint, none. Great-toe, ungual joint, no deposit. Metatarso-phalangeal joint, deposit on both surfaces and on sesamoid bone. Metatarsal and I. cuneiform, deposit on metatarsal only. Deposit on the intercuneiform joints. Scaphoid, deposit on all surfaces. Tibia and fibula with deposit. A scanty deposit on os calcis. Much abrasion on femur, patella, and tibia, and a few specks of deposit. <i>Left side:</i> extensive erosion of upper surface of femur. Some trace of lipping at edges. Much erosion of patella, and some of upper surface of tibia. First metatarsal, urate of soda both ends. First phalanx, urate of soda at metatarsal end only. Last phalanx, no deposit.

## No. 43.—BENJAMIN C. 41.

EXTERNAL APPEARANCES . . .	Great general anasarca.
HEAD:	
CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER, ARTERIES, BRAIN, SPINAL CORD, AND EYE . . . . .	} Examination not permitted.
EARS . . . . .	
CHEST: . . . . .	Upper two costal cartilages calcified.
ESOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . .	} Normal; no deposit in joints.
LUNGS . . . . .	
HEART . . . . .	Infarct at apex of left lung, occupying nearly whole lobe; an adherent clot found in a large branch of the pulmonary artery.
	Weight, 26 oz.; pericardium universally adherent; cusps of mitral valve adherent; orifice narrow; aortic valves incompetent and stiff.
AORTA AND VESSELS . . . .	Normal.
ABDOMEN:	
PERITONEUM . . . . .	Some ascites.
STOMACH AND INTESTINES . . .	Normal.
LIVER . . . . .	Large; weight, 74 oz.; of nutmeg section.
SPLEEN . . . . .	Slightly enlarged, and with an old infarction; all viscera rather putrid.
PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . .	Normal.
KIDNEYS . . . . .	Surface granular; capsule adherent.
URETERS, BLADDER, AND ORGANS OF GENERATION . . . . .	Normal.
JOINTS . . . . .	Both shoulder-joints, both sterno-clavicular, both index metacarpo-phalangeal, and left middle metacarpo-phalangeal, no degeneration or deposit. Left great-toe, left meta-

tarso-phalangeal, left cuneiform, left astragalus, and left ankle, no degeneration. Right great-toe, phalangeal, and right metatarso-phalangeal (proximal only), no degeneration. Changes in both knees, in right ankle, in right great-toe, in right metatarso-cuneiform, and in both elbows. Deposit in left knee, left elbow, right great-toe, and right elbow.

**No. 44.—WILLIAM R. 44.**

EXTERNAL APPEARANCES . . .	Fairly nourished and muscular.
<b>HEAD :</b>	
CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER . .	Normal.
ARTERIES . . . . .	Not atheromatous.
BRAIN . . . . .	Normal.
CHEST :	Upper two pair of costal cartilages calcified.
ESOPHAGUS, GLANDS OF NECK, } LARYNX, AND TRACHEA . . }	Normal ; no deposit in laryngeal joints.
LUNGS . . . . .	Somewhat emphysematous at edges, but no large bullæ ; at right base a firm adhesion, and at the part of the lung near the pericardium, diaphragm, and dorsal vertebræ about 2 inches square of partly solidified lung.
HEART . . . . .	On opening the pericardium, it was found to be full of recent blood-clot. This proceeded from a small (walnut-size) aneurysm of the aorta opening into the pericardium.
AORTA AND VESSELS . . .	Generally atheromatous.
<b>ABDOMEN :</b>	
PERITONEUM, STOMACH, AND INTESTINES . . . . .	Normal.
LIVER . . . . .	Some slight increase of fibrous tissue throughout.
SPLEEN, PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS .	Normal.
KIDNEYS . . . . .	Not small, but surface granular and capsule adherent, and some cysts present.
URETERS, BLADDER, AND ORGANS OF GENERATION . . . . .	Normal.
JOINTS . . . . .	Deposit of urate of soda in both great-toes and both knees, with erosion in knees.

**No. 45.—GEORGE S. 65.**

EXTERNAL APPEARANCES . . .	Lean, but some fat remaining over abdomen.
HEAD :	
CRANIAL BONES, DURA MATER, SINUSES, ARACH- NOID, PIA MATER, ARTERIES, BRAIN, SPINAL CORD, AND EYE . . . . .	} Examination not allowed.
EARS . . . . .	
No tophi.	
CHEST:	
ESOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . .	Normal.
HEART . . . . .	Pericardium and endocardium normal.
AORTA AND VESSELS . . . .	Many patches of atheroma ; none calcified.
ABDOMEN :	
PERITONEUM . . . . .	Many black patches on surface of small intestines.
STOMACH . . . . .	Normal.
INTESTINES . . . . .	No ulcers in small intestines ; in large, many deep ulcers with swollen and injected edges.



LIVER . . . . .	On upper surface of right lobe a large abscess with very irregular walls; no bounding membrane, and several processes dipping into the surrounding liver structure.
SPLEEN . . . . .	Weight, 6 oz.; very soft.
PANCREAS . . . . .	Normal.
ABDOMINAL LYMPHATICS . . . . .	Not enlarged.
SUPRA RENALS, KIDNEYS, URETERS, BLADDER, ORGANS OF GENERATION.	Normal.
JOINTS . . . . .	One speck of deposit on proximal surface of each great-toe joint; some degeneration in middle of each patella and in each intercondyloid groove, but no deposit. Right index metacarpo-phalangeal joint, no deposit.]

**No. 46.—JAMES B. 35.**

EXTERNAL APPEARANCES . . . General anasarca.

**HEAD :**

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID PIA	} Not examined.
MATER, ARTERIES, BRAIN, SPINAL CORD, AND EYE . . . . .	
EARS . . . . .	No topi.

**CHEST :**

ESOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . .	Not examined.
LUNGS . . . . .	Emphysematous.
HEART . . . . .	Valves normal; left ventricle hypertrophied.

**ABDOMEN :**

PERITONEUM . . . . .	Some ascites.
STOMACH, INTESTINES, LIVER, SPLEEN, PANCREAS, AND ABDOMINAL LYMPHATICS . . . . .	} Normal.
KIDNEYS . . . . .	
JOINTS . . . . .	Both kidneys granular; small capsule adherent; a few small cysts on each.
	Left great-toe, metatarsophalangeal joint, at edge showed a scanty deposit; right, none.

**No. 47.—WILLIAM P. 52.**

EXTERNAL APPEARANCES . . . No anasarca.

**HEAD :**

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER . . . . .	Normal.
ARTERIES . . . . .	All highly atheromatous.
BRAIN . . . . .	A large hæmorrhage, extending from the line of junction of the left corpus striatum and optic thalamus on the left side, almost destroying the whole corpus striatum outside the inner capsule, and also extending a little way within it. Optic thalamus destroyed, except a very thin layer at edge of third ventricle. No blood in right ventricle, iter, or third ventricle. Crus cerebri much bulged downwards from pressure of the hæmorrhage above it.
EARS . . . . .	No topi.

**CHEST :**

ESOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . .	Normal.
LUNGS . . . . .	Highly emphysematous.
HEART . . . . .	Pericardium and endocardium normal. Valves all normal. Weight, 19 oz. Great hypertrophy of left ventricle, and some of right.
AORTA AND VESSELS . . . . .	Vessels everywhere much thickened. Aorta greatly thickened.

**ABDOMEN :**

PERITONEUM, STOMACH, INTESTINES, AND LIVER . . . . .	Normal.
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No. 48.—PATRAIC S. 55.1

ESOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . . Normal.  
LUNGS . . . . . Weight of left, 40 oz.; lower lobe consolidated  
throughout; granular on section; airless; sinking at once in

water. In parts red, elsewhere pale. Weight of right, 29 oz.; lowest part of lowest lobe almost but not quite airless; sinking in water.

HEART . . . . . Pericardium normal; a milk-spot near apex of left ventricle; tissue brownish and degenerate; weight, 11 oz. Valves normal.

AORTA AND VESSELS . . . Slightly atheromatous; no calcification.

#### ABDOMEN:

PERITONEUM, STOMACH, AND INTESTINES . . . . . Normal.

LIVER . . . . . Swollen; containing much blood.

SPLEEN . . . . . Small; very soft.

PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . Normal.

KIDNEYS . . . . . Cortex narrow; some cysts on surface; capsule somewhat adherent; surface granular; weight, 9 oz.

URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.

JOINTS . . . . . In right knee, two small specks of urate of soda, with a little abrasion in the intercondyloid groove. No deposit or abrasion in left knee. No deposit, but slight abrasion in both great-toes. Both patellæ striated on articular surface, but not abraded, and without deposit.

#### No. 50.—WILLIAM G. 46.

EXTERNAL APPEARANCES . . Fairly nourished; no anasarca.

#### HEAD:

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER . Normal.

ARTERIES . . . . . Atheromatous, but no calcification.

BRAIN . . . . . A large hæmorrhage had destroyed the whole of the corpus striatum outside the inner capsule, and the outer part of the optic thalamus, with part of the roof of the lateral ventricle, which was occupied by a large clot; much softening around the hæmorrhage; in the posterior part of the left cerebral hemisphere there was an older hæmorrhage of almond-size, occupied by a partly decolorised clot.

SPINAL CORD . . . . . Not examined.

EARS . . . . . Normal; no topi.

#### CHEST:

ESOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . Normal.

LUNGS . . . . . Both emphysematous.

HEART . . . . . Great hypertrophy of left ventricle; valves normal.

AORTA AND VESSELS . . . Normal.

#### ABDOMEN:

PERITONEUM, STOMACH, AND INTESTINES . . . . . Normal.

LIVER . . . . . Somewhat fatty.

SPLEEN, PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . Normal.

KIDNEYS . . . . . Small, granular with cysts; cortex narrow; no deposit in tubules.

URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.

JOINTS . . . . . A speck of urate of soda in proximal phalanx of great-toe on each side; none in knees.

#### No. 51.—ELIZABETH B. 56.

EXTERNAL APPEARANCES . . The right leg purple up to junction of lower and middle third of thigh; toes of foot black, and a black bulla on posterior surface of leg; left leg purple in front to junction of lower and middle third of thigh; behind it extends

well up to the fold of the glutei, and over and posterior to the trochanter major there are a commencing slough and some bullæ. No rigor mortis.

HEAD :

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA }  
MATER, ARTERIES, BRAIN, SPINAL CORD, EYE, AND EAR. . . } Not examined.

CHEST :

ESOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . . Normal.

LUNGS . . . . . Considerable emphysema.

HEART . . . . . Tricuspid orifice admits three fingers easily ;  
a few small vegetations on the valve ; left auricle very large ;  
contained much clot, and some of it was firmly adherent in the  
appendix ; mitral valve contracted ; admits point of one finger ;  
hard calcareous in places ; chordæ tendinæ contracted into bunches  
and hardened ; left ventricle not much altered ; endocardium  
rather opaque towards the base (upper fourth) ; aortic valves  
with numerous patches of atheroma just above them ; heart  
weighed after opening 13 oz. ; there were numerous specks of  
atheroma in the pulmonary artery.

AORTA AND VESSELS . . . . . The aorta was very degenerate throughout, and  
about 3 inches above the bifurcation contained a rather firm dark  
clot ; all above that washed out at once ; from this point down-  
wards a dark clot completely filled both iliacs and the vessels of  
both legs as far as the popliteal space. *In the vessel of the left side,*  
just above the origin of the internal iliac, and extending into  
that vessel, was a calcareous plate nearly one inch long, and ex-  
tending to nearly half the circumference of the vessel ; lower down,  
at the origin of the profunda, was some dark firmly adherent clot,  
and in the popliteal artery was a small bit of pale firmly adherent  
clot ; below this the artery contained only a small quantity of dark  
clot, but round and above the pale clot it was hard and distended  
by thrombus. *On the right side* there were several small patches of  
calcification, and the vessel was calcareous.

ABDOMEN :

PERITONEUM, STOMACH, INTESTINES, LIVER, SPLEEN, PANCREAS, }  
ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . . } Normal.

KIDNEYS . . . . . Hard ; capsule adherent ; and cortex slightly  
diminished.

JOINTS . . . . . A few small specks of urate of soda on both  
great-toe joints (metatarso-phalangeal).

No. 52.—PRICE, James. 52.

EXTERNAL APPEARANCES . . . Lean, with general jaundice.

HEAD :

EARS . . . . . No topi.

CHEST :

ESOPHAGUS AND GLANDS OF NECK . . . . . Normal.

LARYNX AND TRACHEA . . . . . Normal ; cartilages calcified.

LUNGS . . . . . Some recent lymph on surface of each, and a  
gangrenous patch at each base.

HEART . . . . . Valves and pericardium normal ; tissue  
brownish.

AORTA AND VESSELS . . . . . Slightly atheromatous.

ABDOMEN : . . . . . Distended by ascites.

PERITONEUM . . . . . A very little recent lymph here and there  
floating in the serum. At the edge of the mesentery, just where it  
joins the small intestine, were three or four (widely apart) flattish,



rough, hard masses, of about groat-size, of a whitish new growth, of dense texture; new growth glistening on section, somewhat denser in the pyloric than in the cardiac half of the stomach, and with some superficial ulceration of the mucous membrane in the pyloric half; no ulceration in the cardiac half, and no definite ulcer anywhere; no infiltration of œsophagus or of duodenum. Glands slightly infiltrated and one gland on outer surface of pericardium and lying against the upper surface and the diaphragm.

STOMACH . . . . .	The whole of the walls infiltrated by a dense whitish new growth; mucous surface normal.
INTESTINES . . . . .	Bile could be squeezed with tolerable ease out of the papilla into the duodenum.
LIVER . . . . .	No new growth; gall-bladder greatly distended.
SPLEEN . . . . .	Normal.
PANCREAS . . . . .	Enlarged; rough on surface; infiltrated with new growth.
ABDOMINAL LYMPHATICS . .	Mesenteric glands not infiltrated; a few of upper lumbar glands infiltrated.
SUPRA RENALS . . . . .	No new growth.
KIDNEYS . . . . .	No new growth.
URETERS AND BLADDER . .	Normal; prostate gland normal.
ORGANS OF GENERATION . .	Normal.
JOINTS . . . . .	No erosion of toes (great), but outside right great-toe joint a single accumulation, pea-size, of urate of soda. Some erosion of knees in intercondyloid groove and of corresponding surface of patella, but no deposit in any part of knee-joints.

#### No. 53.—CATHAL C. 54.

EXTERNAL APPEARANCES . . . Emaciated.

#### HEAD :

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER . . Normal.  
 ARTERIES . . . . . Not atheromatous.  
 BRAIN . . . . . Normal.

#### CHEST :

ESOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . . Normal.  
 LUNGS . . . . . *Left*: lower lobe solidified, airless, granular on section; *right*: œdematous; upper lobe œdematous.  
 HEART . . . . . Aortic valves incompetent and thickened, but no growth upon them; other valves normal; muscular tissue very soft.  
 AORTA AND VESSELS . . . Just above the aortic valves a small aneurysmal bulging of a very degenerate patch of the aorta.

#### ABDOMEN :

PERITONEUM, STOMACH, AND INTESTINES . . . . . Normal.  
 LIVER . . . . . Somewhat engorged, and of nutmeg section; ducts free.  
 SPLEEN . . . . . Slightly enlarged; soft.  
 PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . . Normal.  
 KIDNEYS . . . . . Very small, granular, with cysts, and very narrow cortex; weight of the two, 5 oz.; capsule adherent.  
 URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.  
 JOINTS . . . . . Urate of soda on both great-toes, metatarso-phalangeal joints.

**! No. 54.—JOHN, C. 60.**

EXTERNAL APPEARANCES . . . Emaciated; no anasarca.

**HEAD:**

CRANIAL BONES, DURA MATER, AND SINUSES . . . Normal.  
ARACHNOID AND PIA MATER. Much watery fluid in. }  
ARTERIES . . . Not atheromatous.  
BRAIN . . . Normal.  
EARS . . . No tophi.

**CHEST:**

ESOPHAGUS, GLANDS OF NECK, LARYNX, TRACHEA. Normal; no ulceration.  
LUNGS . . . Firm adhesions at both apices, with abundant scattered tubercle in both lower lobes. }  
HEART . . . Very small; tissue brownish; valves normal; weight, 9 oz.  
AORTA AND VESSELS . . . Not anywhere calcified.

**ABDOMEN:**

PERITONEUM . . . Considerable ascites.  
STOMACH . . . Opaque and thickened all over.  
INTESTINES . . . Contracted; much mucus in; thickened.  
LIVER . . . Many ulcers (tuberculous) in small and large. }  
Spleen . . . Small, rough on surface; the under surface with well-marked hobnails.  
Spleen . . . Adherent to stomach and liver.  
PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . Normal.  
KIDNEYS . . . Surface somewhat rough; capsule adherent; no cyst; not reduced in size.

URETERS, BLADDER, AND ORGANS OF GENERATION . . . Normal.  
JOINTS . . . Some urate of soda in both great-toes, metatarso-phalangeal joint, scattered round the edge of the last phalanx, somewhat more in right than left. Index normal. Some degeneration of patellæ; no deposit but in knees.

**No. 55.—ABRAHAM S. 49.**

EXTERNAL APPEARANCES . . . Very pale; lean; no anasarca.

**HEAD:**

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER, } Normal.  
ARTERIES, AND BRAIN . . . }  
EARS . . . No tophi.

**CHEST:**

ESOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . Normal.  
LUNGS . . . Emphysematous, with several adhesions on sides; no tubercle.  
HEART . . . Weight, 20 oz.; all valves normal; aortic valves competent; one cusp with a small fenestra; great hypertrophy of left ventricle.  
AORTA AND VESSELS . . . With very many patches of atheroma; these also abundant in the celiac axis and its branches.

**ABDOMEN:**

PERITONEUM . . . Normal.  
STOMACH . . . Part of posterior surface with piece of omentum adherent to pancreas; on posterior surface, and nearer the lesser curve than the greater, was an ulcer measuring  $1\frac{1}{2}$  in. (long axis) by  $\frac{3}{4}$  in. (transversely); the upper wall abrupt and undermined; the lower wall rounded, smooth, and apparently healed; attached to its floor were some shreds of blood, and a small aneurysmal bulging

of an artery with distinct round-edged opening in it was easily discerned; no dense tissue in walls of ulcer; gastric mucous membrane otherwise normal.

INTESTINES . . . . .	Normal throughout, containing a little altered blood.
LIVER . . . . .	Somewhat large and pale; not otherwise abnormal; ducts free; gall-bladder containing much pale watery bile.
SPLEEN . . . . .	Somewhat enlarged, pale, but firm; weight, 11 oz.
PANCREAS . . . . .	Normal throughout.
ABDOMINAL LYMPHATICS AND SUPRA RENALS. . . . .	Normal.
KIDNEYS . . . . .	With many cysts; surface rough; structure of cortex indistinct; not small, but obviously diseased; capsule adherent; weight, 11 oz.
URETERS AND BLADDER . . .	Normal.
ORGANS OF GENERATION . .	Normal.
JOINTS . . . . .	Many with urate of soda deposit.

#### No. 56.—ELIZABETH B. 50.

EXTERNAL APPEARANCES . . Extreme obesity; mammae gigantic; fat in abdominal walls 2 to 3 inches thick; said to have weighed 22 stone. Height about 5 ft. 3 in. to 5 ft. 4 in. Skin slightly bile-tinged in parts; much decomposition.

#### HEAD:

CRANIAL BONES, DURA MATER, SINUSES, ARACH- NOID, PIA MATER, ARTERIES, BRAIN, SPINAL CORD, EYE, AND EAR . . . . .	} Examination not allowed.
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#### CHEST:

LUNGS . . . . .	Slight emphysema and some little œdema of the bases.
HEART . . . . .	Soft and covered with fat, so that muscle was only visible in patches; valves normal.
AORTA AND VESSELS . . .	Normal.

#### ABDOMEN:

PERITONEUM . . . . .	Great omentum contained many pounds of fat. No adhesion or signs of peritonitis.
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STOMACH AND INTESTINES . . The stomach, duodenum, and pancreas seemed firmly matted together in fat and connective tissue, and in parts this tissue seemed hard and almost cartilaginous on section, and it contained numerous spots and streaks of a white matter, which gave it the appearance of having been splashed with whitewash. Similar white spots and splashes were found in the meso-colon, and fatty tissue round the colon and in the subperitoneal fat of the abdominal walls. The duodenum is bile-stained, and the common duct is patent. On removing the small intestines, recent lymph and adhesions were found between the left end of the transverse colon and the adjacent small intestines, and the appendices epiploica of the colon at this point were much firmer than elsewhere, and under their peritoneal covering were several small hæmorrhages and numerous white spots. Intestines normal when opened.

LIVER . . . . .	Large, but not containing new growth. Gall-bladder large; contains several stones. Gall-ducts dilated to the size of a thumb or finger.
SPLEEN . . . . .	Soft; decomposed.

PANCREAS . . . . .	Rather firm.
ABDOMINAL LYMPHATICS . . . . .	Normal. No large glands found.
SUPRA RENALS . . . . .	Normal.
KIDNEYS . . . . .	Large and markedly granular on surface; dark pulpy from decomposition; surrounded by fat and watery subperitoneal tissue; also splashed with white; pelves of kidneys not dilated; no calculi seen.
URETERS AND BLADDER . . . . .	Ureter normal and patent; bladder empty, except for a few drops of a milky fluid.
ORGANS OF GENERATION . . . . .	Normal.
JOINTS . . . . .	Uratie deposit in right great-toe metatarso-phalangeal joint.

**No. 57.—HENRY H. 43.**

EXTERNAL APPEARANCES . . . . . Lean.

**HEAD :**

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER . . . . .	Normal.
ARTERIES . . . . .	Not atheromatous.
BRAIN . . . . .	Normal.
EARS . . . . .	No tophi.

**CHEST :**

ESOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . .	Normal.
LUNGS . . . . .	Both highly cedematous and emphysematous. No tubercle.
HEART . . . . .	Some opacities of pericardium. Valves all normal. Weight, 22 oz. Muscular tissue obviously degenerate.
AORTA AND VESSELS . . . . .	Not highly atheromatous.

**ABDOMEN :**

PERITONEUM, STOMACH, AND INTESTINES . . . . .	Normal.
LIVER . . . . .	Somewhat fatty; ducts free.
SPLEEN . . . . .	With one large and one small infarct; both pale, but not depressed.
PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . .	Normal.
KIDNEYS . . . . .	<i>Left:</i> small, and surface much puckered. Weight, 5 oz. Cortex narrow. <i>Right:</i> large. Weight, 13 oz. Section of disorganised appearance. Capsule adherent.
URETERS AND BLADDER . . . . .	Normal; containing a very little urine; contracted.
ORGANS OF GENERATION . . . . .	Normal.
JOINTS . . . . .	Abundant deposit of urate of soda in both great-toes, metatarso-phalangeal joint.

**No. 58.—FEAR G. 54.**

JOINTS . . . . .	Right knee: in upper part of intercondyloid groove a raised spot about $\frac{3}{16}$ ths inch by $\frac{1}{16}$ th containing urate of soda; also scattered specks of urate of soda on inner edge of internal condyle; also on inner semilunar cartilage, upper surface. None on tibia. A wide fringe of urate of soda along whole lower edge of patella, widest along inner half. Great-toe: finely granular scattered deposit over whole surface of distal end of metatarso-phalangeal joint, and also over whole proximal surface; on last most thick at superior edge. Ankle (tibia, fibula, and astragalus) surfaces very finely powdered. Phalangeal joint of great-toe, one large central speck on each surface. Death was due to a fall causing fracture of the skull.
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## No. 59.—ELIZA W. 66.

EXTERNAL APPEARANCES . . Well-nourished; considerable amount of subcutaneous fat.

## HEAD:

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA } Not examined.  
MATER, ARTERIES, BRAIN, SPINAL CORD, EYE. . . . . }  
EARS . . . . . No topi.

## CHEST:

ESOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . . Normal.  
LUNGS . . . . . Emphysematous; some old adhesions in the right axilla; some blood-stained fluid about half a pint in left pleura.  
HEART . . . . . Very soft and thin-walled; left ventricle fairly thick, but soft from decomposition.  
AORTA AND VESSELS . . . . . Extremely atheromatous; the part just above the bifurcation is an almost completely calcified tube.

## ABDOMEN:

PERITONEUM AND STOMACH . . On opening the abdomen, a large amount of blood-stained fluid came out, and the parietal peritoneum was found to be infiltrated with new growth; the great omentum was contracted and reduced to a nodular mass of new growth, and the intestines were studded over with nodules of the same. The lumbar glands were large and infiltrated with the pulpy new growth. Stomach natural as to its mucous surface.

INTESTINES . . . . . New growth abundant on outer surface.  
LIVER . . . . . Pale; fatty; numerous adhesions.  
SPLEEN AND PANCREAS . . . . . Normal.  
ABDOMINAL LYMPHATICS . . . . . Enlarged and infiltrated.  
SUPRA RENALS . . . . . Normal.  
KIDNEYS . . . . . Small; granular; cortex much reduced in width; capsule does not come off easily.  
URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.  
JOINTS . . . . . Urate of soda in both great-toes, metatarsophalangeal joint. Cartilage over right patella rough and velvety. No deposit.

## No. 60.—ELIZA M. 44.]

EXTERNAL APPEARANCES . . . Emaciated; no jaundice.

## HEAD:

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER . . Normal.  
ARTERIES . . . . . Not atheromatous.  
BRAIN . . . . . Normal.

## CHEST:

ESOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . . Normal.  
LUNGS . . . . . Both normal; no adhesions; no pleural effusion.  
HEART . . . . . On anterior surface of left ventricle a milk-spot; valves normal; no pericardial effusion.  
AORTA AND VESSELS . . . . . Not atheromatous.

## ABDOMEN:

PERITONEUM . . . . . Distended.  
SOMELymph in peritoneum, and a great deal of slightly turbid fluid.  
STOMACH . . . . . Normal.  
INTESTINES . . . . . Mucous membrane velvety.

**LIVER** . . . . . Weight, 38 oz.; ducts free; gall-bladder containing dark bile; surface rough, with rounded nodules; ridge fibrous; much fibrous tissue obvious on section, which was of a very pale yellow.

**SPLEEN** . . . . . Weight, 10 oz.; soft capsule thickened.

**PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS** . . . . Normal.

**KIDNEYS** . . . . . Capsule easily detached; surface smooth.

**URETERS AND BLADDER** . . . Normal.

**JOINTS** . . . . . Right patella, cartilage somewhat velvety. Right femur and tibia, no degeneration. Deposit on both metatarso-phalangeal joints of great-toes.

**No. 61. DUINE\_M. [ 40-50 (not certainly known). ]**

**EXTERNAL APPEARANCES** . . . Well-nourished; no anasarca.

**HEAD :**

**CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER** . . Normal.

**ARTERIES** . . . . . Vessels at base atheromatous.

**BRAIN** . . . . . Normal.

**EARS** . . . . . No topi.

**CHEST :**

**ESOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA** . . . . Normal.

**LUNGS** . . . . . Emphysematous.

**HEART** . . . . . Some hypertrophy of left ventricle. Some general dilatation of left. Pericardium normal. Aortic valves not competent; thickened. No growths.

**AORTA AND VESSELS** . . . Atheromatous in parts; calcified at bifurcation. A small aneurysm, containing no clot, on posterior part of last part of arch of aorta-wall, with many calcareous plates.

**ABDOMEN :**

**PERITONEUM, STOMACH, AND INTESTINES** . . . . . Normal.

**LIVER** . . . . . Ducts normal. Structure normal.

**SPLEEN** . . . . . Hard and engorged.

**PANCREAS, ABDOMINAL LYMPHATICS, SUPRA RENALS** . . . . Normal.

**KIDNEYS** . . . . . Granular; capsule adherent; uratic deposit visible in tubules of cortex.]

**URETERS AND BLADDER** . . . Normal.

**ORGANS OF GENERATION** . . . A well-marked scar in right groin.

**JOINTS** . . . . . Many joints with urate of soda.

**No. 62.—JAMES B., 54.**

**EXTERNAL APPEARANCES** . . . Fairly nourished. Rigor mortis absent.†

**HEAD :**

**CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER** . Normal.

**ARTERIES, BRAIN** . . . . . The left middle cerebral artery was in the first part of its course found to be distended with dark adherent clot. No decolorised part was discovered. The artery beyond this dark clot was empty. The other arteries at the base appeared natural. On removing the cranium at the point where the membranes had been cut, a softened patch was noticed (about the size of a cob-nut) on the surface of the left hemisphere, affecting the upper temporo-sphenoidal and lower parietal convolutions. On opening the brain, this was seen to be continuous with extensive softening of the thalamus opticus and the posterior portion of the corpus striatum. The anterior portion of the latter seemed to be firm and fairly natural. The rest of the brain appeared natural.†

**CHEST :**

ESOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . . Normal.

LUNGS . . . . . Left lung, considerable emphysema; right, slight pleural adhesions and general œdema.

HEART . . . . . Weight, 15 oz. Right side, natural; left side, mitral valve thickened and contracted. A few small vegetations. Aortic valves thickened, and in parts slightly adherent to each other by their edges.

AORTA AND VESSELS . . . . . Slight atheroma beyond the valves.

**ABDOMEN :**

PERITONEUM, STOMACH, INTESTINES . . . . . Normal.

LIVER . . . . . Natural; a few small gall-stones in bladder.

SPLEEN . . . . . Soft and pulpy (from decomposition).

PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . . Normal.

KIDNEYS . . . . . Slightly enlarged; each contained several pale yellow infarcts. Weight of both, 13 oz. Capsule does not peel freely; a few small cysts.

URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.

JOINTS . . . . . Deposits of urate in both great-toe metatarso-phalangeal joints; none in knees.

**No. 63.—ELIZA B. 52. :**

EXTERNAL APPEARANCES . . . . . Stout; on fore-arms and hands brown pigmented patches.

**HEAD :**

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER, } Normal.  
ARTERIES, AND BRAIN . . . . . }

EARS . . . . . No topi.

CHEST : . . . . . On opening the chest, the right pleura was found full of clotted blood and serum, which apparently came from recent adhesions on the surface of the lung. No opening of a vessel was to be traced. The upper lobe of the right lung presented a few adhesions, and on section appeared engorged and full of frothy fluid. The lower lobe was covered with recent adhesions, and on section was seen to be throughout in a condition of red hepatisation. No adherent clots were found in the pulmonary vessels. The left lung presented a few old adhesions on various parts of its surface, and on section appeared engorged and full of frothy fluid, but was nowhere solidified.

ESOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . . Normal.

HEART, AORTA, AND VESSELS . . . . . Pericardium universally adherent to the heart; heart enlarged; weight, 22 oz. All the cavities dilated and their walls hypertrophied. Tricuspid valve, edges thickened and cords shortened. Pulmonary artery normal. Mitral valve thickened and narrow, admitting two fingers only. Vegetations on free edge, and patches of atheroma on the ventricular surface. Aortic valves slightly thickened; patches of atheroma on all the sinuses, and along the course of the aorta.

**ABDOMEN :**

PERITONEUM, STOMACH, AND INTESTINES . . . . . Normal.

LIVER . . . . . Weight, 4 lbs.; surface mottled with yellow, and rather rough; section hard and firm. The liver substance tears with difficulty, and is evidently cirrhotic.

SPLEEN . . . . . Seven inches by three; weight, 17 oz.; pulpy.

PANCREAS AND ABDOMINAL LYMPHATICS . . . . . Normal.

SUPRA RENALS . . . . . Small, but not diseased.

KIDNEYS . . . . . Small; weight, right, 5 oz.; left, 5 oz.; capsule adherent; cortex on both one-eighth inch thick at most; section very hard.  
 URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.  
 JOINTS . . . . . Urate of soda on both great-toe joints (metatarso-phalangeal).

No. 64.—GEORGE F. 35.

EXTERNAL APPEARANCES . . . Fairly nourished; no dropsy. |  
 EARS . . . . . No tophi.

CHEST:

ŒSOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . . Normal.  
 LUNGS . . . . . Each lung enclosed in a greatly thickened pleura, but not completely compressed, and feeling like a sponge in a bag. On the surface of each thickened pleura was a soft deposit of recent lymph. The left pleura contained about a pint of clear serum; the right somewhat more than a pint of thick purulent fluid. Substance of both lungs normal. Bronchial glands normal. Weight of left lung, enclosed in pleura, 22 oz. Weight of right lung, enclosed in pleura, 17 oz. A small calcareous deposit, with some fibrous thickening round it, was found at the right apex. It was well within the lung, and there was no adhesion to the parietal surface near it.

HEART . . . . . Pericardium and valves normal; dilatation of both ventricles and some hypertrophy of right; weight, 11½ oz.

AORTA AND VESSELS . . . . . Not highly atheromatous.

ABDOMEN:

PERITONEUM . . . . . Liver surface rough from old adhesions.  
 STOMACH AND INTESTINES . . . . . Normal.  
 LIVER . . . . . Somewhat engorged; firmly adherent to diaphragm.  
 SPLEEN . . . . . Slightly enlarged; engorged.  
 PANCREAS AND ABDOMINAL LYMPHATICS . . . . . Normal. Just above liver three caseous lymphatics.

SUPRA RENALS . . . . . *Right*, caseous throughout; *left*, normal.

KIDNEYS . . . . . Very hard and large; surface smooth.

URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.

JOINTS . . . . . Knees, no degeneration and no deposit. Urate of soda and degeneration in both great-toes (metatarso-phalangeal joint). Scaphoid joints normal. Distal surface of metatarso-phalangeal joint of left great-toe with small patches of urate of soda on the periphery of the articular surface all round caps. A small patch of degeneration in the middle of the articular surface without urate of soda. *Right*: similar changes, but without the central degeneration, and with less urate of soda.

No. 65.—JOSEPH W. 57.

EXTERNAL APPEARANCES . . . Very slight anasarca of legs.

EARS . . . . . No tophi.

CHEST:

ŒSOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . . Normal.

LUNGS . . . . . Highly emphysematous and very cedematous; weight of left, 21 oz.; weight of right, 29 oz.; no adhesions.



- HEART . . . . . Dilated and hypertrophied; weight,  $22\frac{1}{2}$  oz.; pericardium normal; edges and cords of both mitral and tricuspid orifices very slightly thickened; both orifices greatly dilated; tricuspid admitted all fingers of both hands; mitral admitted all fingers of one hand; left auricle dilated, and right auricle enormously dilated.
- AORTA AND VESSELS . . . . With many opaque but no calcified patches.
- ABDOMEN:
- PERITONEUM . . . . . Some ascites; omental fat of a reddish hue.
- STOMACH . . . . . Normal.
- INTESTINES . . . . . Mucous membrane dark red and of velvety feel.
- LIVER . . . . . With a patch of scar tissue dipping into substance; near lower edge firm and of nutmeg section in parts.
- SPLEEN . . . . . Weight, 6 oz.; very hard.
- PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . Normal.
- KIDNEYS . . . . . Weight, 13 oz.; very hard; capsule splitting when detached; no cysts.
- URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.
- JOINTS . . . . . Deposit of urate of soda on distal side of great-toe metatarso-phalangeal joint (on both sides of body) and on proximal as well as on right side; knees, no erosion or deposit.

**No. 66.—DOMHNALL, D. 40.**

EXTERNAL APPEARANCES !. .] No anasarca.]

**HEAD:**

- CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER . Normal.
- ARTERIES . . . . . Both middle cerebral arteries atheromatous and one patch of atheroma in basilar artery.
- BRAIN . . . . . No hæmorrhages.]
- EARS . . . . .] No tophi.

**CHEST:**

- ŒSOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . . Normal.
- LUNGS . . . . . Both cedematous.
- HEART . . . . . Distinct hypertrophy of left ventricle; pericardium and valves, normal.
- AORTA AND VESSELS . . . . Not calcified.

**ABDOMEN:**

- PERITONEUM . . . . . Greatly distended with fluid.\*
- STOMACH AND INTESTINES . . Much serum in, with a few shreds of lymph.
- LIVER . . . . . Normal.
- LIVER . . . . . Some shreds of lymph on surface; ducts free.
- SPLEEN . . . . . Slightly enlarged.
- PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . Normal.
- KIDNEYS . . . . . Large and pale, but capsule adherent and structure very firm.
- URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.
- JOINTS . . . . . Right great-toe and knee, none; left knee, none; left great-toe, metatarso-phalangeal joint, on distal and proximal surfaces a little urate of soda.

**No. 67.—GEORGE B. 62.**

EXTERNAL APPEARANCES! . . A well-nourished man.

**HEAD:**

- CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER !. Normal.
- ARTERIES . . . . . At base highly atheromatous.

- BRAIN** . . . . . A large hæmorrhage has destroyed the whole posterior part of the cerebellum and part of the optic thalamus; a small hæmorrhage just beneath the surface of the left corpus striatum and most of the anterior part of the left optic thalamus; a large hæmorrhage into the whole pons below, and not involving the iter. Third and lateral ventricles full of blood. In third a mass of hazel-nut size filled with yellowish-brown gum-like material. In root of left crus cerebri a small separate hæmorrhage. Both lateral hæmorrhages extended backward to pons.
- EARS** . . . . . No topi.
- CHEST:**
- ESOPHAGUS, GLANDS OF NECK, } Normal; no urate of soda in crico-arytænoid**  
**LARYNX, AND TRACHEA . . }** joints.
- LUNGS** . . . . . Very emphysematous; many small nodules in them of whitish gritty material.
- HEART** . . . . . Great hypertrophy of left ventricle; weight of heart, 22 oz.; valves normal.
- AORTA AND VESSELS** . . . Much atheroma; no calcification.
- ABDOMEN:**
- PERITONEUM, STOMACH, INTESTINES, AND LIVER** . . . . . Normal.
- SPLEEN, PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS** . Normal.
- KIDNEYS** . . . . . Granular; cortex very narrow; a few cysts on each.
- URETERS, BLADDER, AND ORGANS OF GENERATION** . . . . . Normal.
- JOINTS** . . . . . No deposit in left shoulder, both sternoclavicular joints, left and right index metacarpo-phalangeal joints, or left great-toe (metatarso-phalangeal). In phalangeal joint on distal side one speck. No other. Left ankle, on inner surface of astragalus. None on upper surface of astragalus, tibia, or fibula. Last joint but one of second toe, no deposit. Left knee, patella, a rough degenerate patch on inner surface. Femur, semilunar cartilages, tibia, all without deposit. Right knee, one speck on cutting into cartilage of intercondyloid groove of femur. Cartilage of femur quite smooth. Patella, no deposit. Semilunar cartilages, no deposit. On outer part of articular surface of tibia, in middle, one speck.

**No. 68.—LOUIS M. 55.**

- EXTERNAL APPEARANCES** . . Lean; some blood about mouth and nostrils; no anasarca.
- HEAD:**
- CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER** . Normal.
- ARTERIES** . . . . . Some opaque patches; no calcification.
- BRAIN** . . . . . Normal.
- EARS** . . . . . No topi.
- CHEST:**
- ESOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA** . . . . . Normal.
- LUNGS** . . . . . Both emphysematous; weight of right, 18 oz.; left apex excavated by aneurysm and firmly adherent; left pleura contained a large basophilous of blood-clot; there was a little lymph on the apex of left lung.
- HEART** . . . . . Weight, 13 oz.; two aortic valves adherent to one another; all much fenestrated; other valves normal; left valve somewhat disproportionately thick.
- AORTA AND VESSELS** . . . Some swollen patches; no calcification below the aneurysm.
- ABDOMEN:**
- PERITONEUM, STOMACH, AND INTESTINES** . . . . . Normal.
- SPLEEN** . . . . . Firm, enlarged; weight, 15 oz.: no infarcts.
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PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . .	Normal.
KIDNEYS . . . . .	Weight, 15 oz.; cortex not narrower than normal; cysts on both; capsule adherent; surface somewhat rough.
URETERS, BLADDER, AND ORGANS OF GENERATION . . . . .	Normal.
JOINTS . . . . .	Right great-toe, on inner edge of metatarso-phalangeal joint and proximal surface a little urate of soda. No degeneration. On distal surface a good deal of urate of soda in centre of cup, and some on deeper part not quite in centre. Phalangeal joint, urate of soda, some on both surfaces. Right knee, no erosion or deposit (superficial or deep). Left toe and left knee, neither erosion nor deposit.

## No. 69.—EDWARD H. 62.

EXTERNAL APPEARANCES . . . . .	Slight anasarca of feet; none of ankles.
HEAD:	
CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER . . . . .	Normal.
ARTERIES . . . . .	Highly atheromatous, especially both middle cerebral arteries. <span style="float: right;">[REPAI]</span>
BRAIN . . . . .	Just outside (almost on) inner capsule on right side, a small old hæmorrhage of split-pea size.
EARS . . . . .	No topi.
CHEST:	
ŒSOPHAGUS AND GLANDS OF NECK . . . . .	Normal.
LARYNX AND TRACHEA . . . . .	No œdema glottidis.
LUNGS . . . . .	Firm old adhesions on both sides; both highly emphysematous; no liquid effusion, but a little recent lymph at both bases.
HEART . . . . .	Pericardium normal; great hypertrophy of left ventricle; weight, 25 oz.; aortic valves thickened and incompetent; mitral cords thickened; orifice dilated.
AORTA AND VESSELS . . . . .	Much calcareous degeneration.
ABDOMEN:	
PERITONEUM, STOMACH, AND INTESTINES . . . . .	Normal.
LIVER . . . . .	Ducts free, but gall-bladder full of small stones of irregular shape.
SPLEEN, PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . .	Normal.
KIDNEYS . . . . .	Not smaller than natural, but capsule adherent, with many cysts, and surface granular.
URETERS, BLADDER, AND ORGANS OF GENERATION . . . . .	Normal.
JOINTS . . . . .	Urate of soda in right toe metatarso-phalangeal joint and left knee; some degeneration in right knee; left ankle and both index-fingers, none.

## No. 70.—THOMAS L. 39.

HEAD:	
CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA } MATER, ARTERIES, BRAIN, SPINAL CORD, EYE, AND EAR. . . }	Not examined.
CHEST:	
ŒSOPHAGUS, GLANDS OF NECK, LARYNX, TRACHEA, AND LUNGS . . . . .	Normal.
HEART . . . . .	Weight, 14 oz.; left ventricle chiefly hypertrophied; no valvular disease.
AORTA AND VESSELS . . . . .	Very slightly atheromatous, and not dilated in the thorax, but just below the origin of the cœliac axis there was

a sacculated aneurysm. There was no general dilatation. The sac was on the front of the vessel, and communicated with it by a circular aperture an inch and a quarter in diameter. The sac was as large as an orange, and contained much firm laminated clot. In its most anterior part it had become thinned away, so that the blood escaped from it between the layers of peritoneum forming the mesentery. In the right iliac region, close to the cæcum, the blood had torn a rent in the mesentery, and escaped into the peritoneal cavity. The sac pushed in front of it the pancreas and transverse colon. There was no erosion of the vertebræ.

# ABDOMEN:

PERITONEUM . . . . . Contained much blood and clot.  
 STOMACH, INTESTINES, LIVER, SPLEEN, PANCREAS, ABDOMINAL LYM- } Normal.  
 PHATICS, AND SUPRA RENALS . . . . .  
 KIDNEYS . . . . . Left, very small and lobulated, as if from a  
 congenital defect; right, large and fatty.  
 URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.  
 JOINTS . . . . . Deposit of urate of soda in right great-toe  
 metatarso-phalangeal joint.

## No. 71.—ALFRED B. 39.

EXTERNAL APPEARANCES . . . . . Lean; no anasarca; several scar-lines on glans  
 penis, with adhesions.

# HEAD:

CRANIAL BONES . . . . . Normal.  
 DURA MATER AND SINUSES . . . . . No adhesions.  
 ARACHNOID AND PIA MATER . . . . . Normal.  
 ARTERIES . . . . . General atheroma in patches, but no artery  
 calcified all round.

BRAIN]. . . . . Outer part of left corpus striatum and optic  
 thalamus were destroyed by a large hæmorrhage into a patch of  
 softened tissue. This extended the whole length of the corpus  
 striatum and optic thalamus, and in one part came within the inner  
 capsule; part of the roof of the ventricle opposite the corpus  
 striatum was broken down.

EARS . . . . . No topi.

# CHEST:

ESOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . . Normal.  
 LUNGS . . . . . Emphysematous.  
 HEART . . . . . Pericardium and valves normal; left ventricle  
 hypertrophied.  
 AORTA AND VESSELS . . . . . Calcified in parts.

# ABDOMEN:

PERITONEUM . . . . . No ascites.  
 STOMACH AND INTESTINES . . . . . Normal.  
 LIVER . . . . . Ducts free; substance somewhat fatty; no  
 scars.  
 SPLEEN, PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . . Normal.  
 KIDNEYS . . . . . Very small, granular, with cysts; capsules  
 firmly adherent.  
 URETERS AND BLADDER . . . . . Normal.  
 ORGANS OF GENERATION . . . . . Scars on penis.  
 JOINTS . . . . . No deposit in knees; urate of soda on both  
 surfaces of both metatarso-phalangeal joints of great-toes; none on  
 phalangeal joints of great-toes. Hand, left, index, none.

*Microscopical Examination*—*Kidney*: blood-vessels much thickened; epithe-  
 lium in tubules granular; glomeruli degenerate; many dilated tubules; capsules  
 of glomeruli very thick. *Heart*: many muscular fibres granular, others normal.



**No. 72.—JOHN W. 66.**

EXTERNAL APPEARANCES . . . No anasarca.

**HEAD :**

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER . . Normal.

ARTERIES . . . . . Highly atheromatous.

BRAIN . . . . . A very small hæmorrhage into a patch of softening of almond-size in outer part of the left corpus striatum and optic thalamus.

EARS . . . . . No tophi.

**CHEST :**

ŒSOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . . Normal.

LUNGS . . . . . Highly atheromatous; large bullæ at base and at edges; upper lobes of both engorged; lower lobes not at all so.

HEART . . . . . Great hypertrophy of left ventricle, slight of right; valves and pericardium normal; weight, 22 oz.; empty in all cavities.

AORTA AND VESSELS . . . Somewhat atheromatous.

**ABDOMEN :**

PERITONEUM, STOMACH, AND INTESTINES . . . . . Normal.

LIVER . . . . . Ducts free; normal.

SPLEEN . . . . . Engorged and hard; not enlarged.

PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . . Normal.

KIDNEYS . . . . . Very small; granular, with cysts; capsule firmly adherent.

URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.

JOINTS . . . . . Urate of soda on both surfaces of right great-toe (metatarso-phalangeal joint).

**No. 73.—HENRY D.**

EXTERNAL APPEARANCES . . . Great general anasarca.

**HEAD :**CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA }  
MATER, ARTERIES, BRAIN, SPINAL CORD, EYE, AND EAR. . } Not examined.**CHEST :**

ŒSOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . . Normal.

LUNGS . . . . . A little lymph on part of lower lobe of left lung; no adhesions; a large effusion into both pleural cavities, so both lungs were somewhat airless. The fluid was clear.

HEART . . . . . Weight, 19 oz.; great hypertrophy of left ventricle; some of right, and great dilatation of all cavities of heart; valves all normal.

AORTA AND VESSELS . . . Not highly atheromatous; nowhere calcified.

**ABDOMEN :** . . . . . Much effusion of clear fluid.PERITONEUM, STOMACH, INTESTINES, AND LIVER . . . }  
Normal; gall-bladder distended with dark bile.

SPLEEN, PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . Normal.

KIDNEYS . . . . . Small, granular; a few cysts on each; cortex very narrow.

URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.

JOINTS . . . . . Right great-toe on phalanx, two specks of urate of soda and both surfaces of left great-toe (metatarso-phalangeal joint); knees, none.

**No. 74.—FREDERICK S. 38.**

EXTERNAL APPEARANCES . . . Very putrid; superficial veins standing out.  
 EARS . . . . . No tophi.

**CHEST:**  
 OESOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . . Normal.  
 LUNGS . . . . . Some adhesions on both sides; left lung crossed by many bands of fibrous tissue, and with great thickening of bronchi; no tubercle.  
 HEART . . . . . Pericardium, a very little recent lymph at base; valves normal.  
 AORTA AND VESSELS . . . . . Normal.

**ABDOMEN:**  
 STOMACH AND INTESTINES . . . . . Normal.  
 LIVER . . . . . With many scars of old gummata on surface; ducts free.  
 SPLEEN . . . . . Enlarged and soft.  
 PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . . Normal.  
 KIDNEYS . . . . . Large, very pale, extremely fatty; no amyloid change.  
 URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.  
 JOINTS . . . . . Some urate of soda on both great-toes (metatarso-phalangeal joint); none in knees.

**No. 75.—ROBERT T. 41.**

EXTERNAL APPEARANCES . . . Lean.

**HEAD:**  
 CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER, }  
 ARTERIES, AND BRAIN . . . . . } Normal.  
 EARS . . . . . No tophi.

**CHEST:**  
 OESOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . . Normal.  
 LUNGS . . . . . Both very œdematous and highly emphysematous; no adhesions.  
 HEART . . . . . Valves normal; left ventricle hypertrophied; weight of heart, 17 oz.  
 AORTA AND VESSELS . . . . . Normal.

**ABDOMEN:**  
 PERITONEUM, STOMACH, AND INTESTINES . . . . . Normal.  
 LIVER . . . . . Very firm; some slight connective tissue increase; ducts free.  
 SPLEEN, PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS . . . . . Normal.  
 KIDNEYS . . . . . Very small capsule, thickened and adherent; surface granular; some cysts on both; cortex very narrow.  
 URETERS, BLADDER, AND ORGANS OF GENERATION . . . . . Normal.  
 JOINTS . . . . . Abundant deposit of urate of soda in both great-toes on both surfaces of metatarso-phalangeal joints. Degeneration, but no urate of soda in knees.

**No. 76.—JOSEPH N. 49.**

EXTERNAL APPEARANCES . . . No anasarca; fairly nourished.

**HEAD:**  
 CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER . . . Normal.  
 ARTERIES . . . . . Not atheromatous.  
 BRAIN . . . . . Normal.

EARS . . . . .	No tophi.
CHEST: . . . . .	Costal cartilages calcified.
ESOPHAGUS, GLANDS OF NECK, LARYNX, AND TRACHEA . . . . .	} A small calcified mass in thyroid.
LUNGS . . . . .	
HEART . . . . .	Both highly emphysematous.
	Pericardium normal; valves normal; both ventricles (the left most) hypertrophied. Tissue fatty.
AORTA AND VESSELS . . . . .	Slightly atheromatous.
ABDOMEN:	
PERITONEUM, STOMACH, AND INTESTINES . . . . .	Normal.
LIVER . . . . .	Fatty.
SPLEEN . . . . .	Enlarged.
ABDOMINAL LYMPHATICS AND SUPRA RENALS . . . . .	Normal.
KIDNEYS . . . . .	Weight, 10 oz.; hard surface, granular; capsule adherent; no cysts; deposit of urates visible in tubules of both cortex and pyramids.
URETERS, BLADDER, AND ORGANS OF GENERATION. . . . .	Normal.
JOINTS . . . . .	Erosion and deposit of urate of soda in metatarso-phalangeal joint of both great-toes.

## No. 77.—HENRY B. 49.

EXTERNAL APPEARANCES . . . . .	General anasarca.
HEAD:	
EARS . . . . .	No tophi.
CHEST:	
LUNGS . . . . .	General adhesions on both sides; both lungs cedematous and engorged.
HEART . . . . .	Left ventricle hypertrophied; weight, 18 oz.; much clear effusion into pericardium.
AORTA . . . . .	Very little atheroma.
ABDOMEN:	
PERITONEUM . . . . .	Considerable ascites.
STOMACH AND INTESTINES . . . . .	Normal.
LIVER . . . . .	Transverse constriction and thickening of capsule (as in tight lacing); otherwise normal.
SPLEEN . . . . .	Very hard and tough; weight, 8 oz.
PANCREAS . . . . .	Normal.
KIDNEYS. . . . .	Granular on surface; capsule somewhat adherent; weight, 16 oz.; old infarcts in both.
URETERS, BLADDER, AND ORGANS OF GENERATION. . . . .	Normal.
JOINTS . . . . .	Knees: some degeneration on the outer half of the right patella; the cartilage of the rest of the right knee normal; left, no degeneration or deposit. Great-toes: both great-toes with a deposit on the deepest part of the phalangeal cup of the metatarso-phalangeal joint and on the convex surface of the metatarsal bone; first metatarsal joint normal, right and left; second metatarsal joint normal, right and left.

## No. 78.—WILLIAM C. 59.

CHEST:	
LUNGS . . . . .	Bronchi filled with blood from a large ruptured aneurysm of pulmonary artery.

**ABDOMEN :**

KIDNEYS . . . . . Granular.

JOINTS . . . . . *Right:* knee, slight degeneration on intercondyloid groove of femur; patella with a splash-like spot of urate of soda in the middle of the median ridge and scattered specks throughout its cartilage; no other degeneration of cartilage. Great-toe: metatarso-phalangeal joint, abundant scattered deposit on both surfaces, but not a universal coating; phalangeal joint, with deposit on both surfaces; metatarsal joints (I. and II.) all with deposit, and all the articulate surfaces of the ankle. Metatarso-phalangeal joint of second toe, no deposit or degeneration. *Left:* knee, femur with some degeneration in intercondyloid groove; a small speck of urate of soda on edge of upper part of outer condyle; patella showing general degeneration of cartilage; no deposit of urate of soda.

**No. 79.—WILLIAM R. 61.**

**HEAD :**

EARS . . . . . One small tophus in right ear.

**CHEST :**

LARYNX AND TRACHEA . . . All joints normal.

LUNGS . . . . . Emphysematous; fluid with lymph in right pleural cavity; some old adhesions on both sides.

HEART . . . . . Weight, 20 oz.; mitral valve thickened; much enlargement of all cavities.

AORTA . . . . . Atheromatous.

**ABDOMEN :**

PERITONEUM . . . . . Some ascites.

LIVER . . . . . Of nutmeg section.

SPLEEN . . . . . Small and hard.

KIDNEYS . . . . . Small; capsule splitting when pulled off; cortex narrow.

JOINTS . . . . . *Right:* knee, all surfaces with abundant deposit of urate of soda; synovial membrane powdered with specks of urate of soda; head of fibula normal. Hip: femur, head abraded; a patch of urate of soda close to the attachment of the ligamentum teres; another deposit of urate of soda on the acetabulum. Great-toes: deposit on both surfaces of metatarso-phalangeal joint. Ankle with deposit on astragalus, os calcis, and on distal end of tibia. Elbow: deposit on all surfaces. Some lipping of articular surface of humerus. A deposit of urate of soda round head of radius. Wrist: scaphoid and semilunar and radial surfaces with deposit of urate of soda. Shoulder: no deposit or degeneration. Sterno-clavicular: some degeneration of cartilage; no deposit. Jaw: no deposit or degeneration. *Left:* knee with abundant deposit, as on right side. Ankle with abundant deposit, as on right side. Great-toe with abundant deposit, as on right side. Wrist: abundant deposit, as on right side. Index metacarpophalangeal joint, abundant deposit on both surfaces. Sterno-clavicular, some degeneration of cartilage; no deposit.

**No. 80.—BENJAMIN W. 53.**

EXTERNAL APPEARANCES . . . Lean.

**HEAD :**

CRANIAL BONES, DURA MATER, SINUSES, ARACHNOID, PIA MATER, }  
ARTERIES, AND BRAIN . . . . . } Normal.

EARS . . . . . No tophi.



## CHEST:

LUNGS	. . . . .	Half a pint of clear fluid in right pleural cavity; right lung collapsed; tuberculous cavity at right apex; some scattered tubercle throughout lung; emphysematous; left lung much engorged, of a dark red gelatinous appearance; no blood in bronchi.
HEART	. . . . .	Right side dilated and hypertrophied; valves normal.
AORTA	. . . . .	Highly atheromatous.
ABDOMEN:	. . . . .	Considerable ascites.
LIVER	. . . . .	Showing well-marked cirrhosis.
SPLEEN	. . . . .	Weight, 10 oz.; soft.
PANCREAS, ABDOMINAL LYMPHATICS, AND SUPRA RENALS	. . . .	Normal.
KIDNEYS.	. . . . .	Not granular.
JOINTS	. . . . .	Both knees with patches of degeneration. No deposit. Great-toes: right metatarso-phalangeal joint with degeneration of cartilages on both surfaces; no deposit; left with deposit of urate of soda on both surfaces of metatarso-phalangeal and of phalangeal joint.

# PROCEEDINGS

OF

## THE ABERNETHIAN SOCIETY

FOR WINTER SESSION 1886-87.

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### OFFICERS.

<i>Presidents</i> . . . .	Dr. J. CALVERT and Mr. G. E. MURRAY.
<i>Vice-Presidents</i> . . . .	Mr. F. W. ANDREWES and Mr. L. GABRIEL.
<i>Treasurer</i> . . . .	Mr. W. S. SAVORY.
<i>Secretaries</i> . . . .	Mr. G. HEATON and Mr. W. BALGARNIE.
<i>Additional Committeemen</i> .	Mr. J. G. OGLE and Mr. J. MOORE.

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An extra-meeting of the Society was held on July the 19th, when Mr. Henry Power read a paper on 'Medicine in the Middle Ages.'

The paper was subsequently printed by the Society for distribution to the members.

*October 14.*

Opening meeting.

Dr. J. Matthews Duncan read the Introductory Address, the subject being 'Concerning Medical Education.'

The paper was subsequently printed in pamphlet form.

*October 21.*

Mr. Spencer showed a case of 'Myositis Ossificans,' the patient being a boy aged 6. There was ossification of several of the muscles connected with the scapula, besides exostoses on the skull and ribs, congenital malformation of the great-toes, and a similar tendency in the thumbs.

Mr. Gay read a paper on 'Suppuration of the Kidney.'

He employed the term in the wider sense of suppuration in and around the kidney.

He related the histories of several cases that had been under his care in the wards.

He stated that abscess may be present without any symptoms, or with only pus in the urine. There may be entire absence of lumbar swelling, in which case diagnosis is very difficult. Several Museum specimens were exhibited, showing the bursting of an abscess into the colon, duodenum, and pleura.

Tubercular disease most commonly attacks both kidneys. There is frequently evidence of tubercular disease elsewhere. He recommended a preliminary aspiration as an aid to diagnosis, after which free incisions and free drainage. Cases had occurred under his care where carboloria had resulted from the use of carbolic acid in the dressing. Nephrectomy is indicated in cases of long standing.

Calculus in the kidney was then discussed. He quoted, as a good example, a case that was under Mr. Marsh's care, in which, after an unsuccessful attempt to remove the kidney by the lumbar incision, it was eventually removed through the loin, with the aid of a second incision through the abdominal wall.

#### *October 28.*

Mr. Spencer showed a case of 'Post-Hemiplegic Chorea' in a boy aged 9. The right side was affected, and the hemiplegia was caused by injuries inflicted by forceps during birth.

Mr. Mowberly exhibited several specimens of 'Locusts,' showing the various changes they undergo at the different periods of their life.

Dr. Roughton showed Cline's splint for Pott's fracture, as modified by himself; the modification preventing displacement of the foot backwards.

Mr. Lane showed a case of dislocation of the lens into the anterior chamber.

Dr. Roughton read a paper for Dr. Wigmore, entitled 'The Experience of a House Surgeon.'

#### *November 4.*

Mr. Wilkie read a paper on 'Physiology in Brain Surgery.'

He began by giving a short history of our knowledge of the brain, pointing out how the brain—the most intricate part of our system—was the last part of our bodies to be scientifically investigated. He mentioned Sir Charles Bell and his theory, and then passed

on to Goltz's views and experiments. He then enumerated some of the chief motor-centres discovered by Goltz, and gave an amusing 'memoria technica' for remembering the order of their situation round the sulcus of Rolando.

Lastly, he described Goltz's experiments, in which he tried to confute the theory of cerebral localisation.

Then passing on to the practical side of the question, he began by showing how a cerebral tumour might be diagnosed and its exact position localised. He mentioned in illustration several instances in which such tumours had been removed by operation with the greatest relief to the patient.

He then discussed briefly the subject of 'chorea,' and suggested that as rheumatism may be viewed as due to a poison having its home in the heart, so we might perhaps regard chorea as due to a poison in the cortical area of the brain. He next passed on to 'Traumatic Epilepsy,' and dwelt at some length on a recent operation of Victor Horsley. In conclusion, Mr. Wilkie urged strongly that the only method of true progress in medicine was the scientific one. Brain physiology and surgery were still in their infancy, scientific experimental research in this direction only dating from the year 1870.

*November 10.*

Mr. Spencer showed a case of 'painful stump' of the left arm; the bulbous ends of the nerves had been resected on several occasions. The biceps muscle was in a condition of constant twitching.

Mr. De Lisle showed a microscopic specimen of foetal lung, and compared with it a specimen of collapsed lung.

Mr. Reece read a paper on 'Compound Fractures.'

He divided the subject into those due to direct violence, and those in which the bones were thrust through the integument as an after complication.

With regard to the carrying of a patient with a fracture, he expressed a hope that at some future time the porters would be recruited from retired members of the medical staff corps.

He then passed on to the method of immediate treatment of compound fractures, in which an attempt is made to convert the compound fracture into a simple one. He recommended closing the wound with lint soaked in sanitas oil, which method had been eminently successful in cases under his care.

He showed a fracture splint, with a modification, by which pressure on the heel was avoided.

After touching on the pathology of fracture, he discussed the



relative advantages of pinning and wiring the ends of fractured bones. When pegging was employed, he suggested that the pegs should be graduated in some way to enable the surgeon to see how far he had driven them in.

The author then dwelt at some length on the complications of compound fractures and their dangers. With regard to primary amputation, he enumerated the different complications which rendered that operation advisable.

November 18.

Mr. Louttit read a paper on 'Mental Evolution an Introduction to Psychology.'

In the first place, he endorsed the opinion of the late Dr. Carpenter, that 'no real progress can be made in psychological science so long as either the mental or the bodily part of man's nature is studied to the exclusion of the other.' He went on to trace the evolution of the mind from the lowest animal organisms, on the assumption that psychology and physiology are intimately associated.

An epitome of the embryonic evolution of man was then given. In his argument he pointed out that concomitant with the gradual increase of organisation the nerve-tissue becomes, *pari passu*, more localised and concentrated in one definite region of the body,—a process co-dependent with the degree of functional activity possessed by the organism. He showed the consequences of this from a psychological standpoint, regarding animals taken severally, and man in his individual development. He explained why it is that reflex action can go on undeterred by consciousness and irrespective of consciousness, illustrating his proof by remarking on the various reflex phenomena of centres below those concerned with consciousness, and as a pathological illustration referred to the functional activity of anencephalic monsters.

In conclusion, he said that evolution implies heredity, in virtue of which certain psychological states become established in the offspring, and that natural selection has its evil as well as its beneficial effect. After alluding to the consanguinities of marriage, the author said that heredity of mental conditions was analogous to the hereditary transmission of various diatheses, *e.g.*, those of scrofula and gout, and presented many aspects; and further, that certain mental conditions have a relationship to certain bodily diseases, and that very frequently the character of the mental pain alters with that of the bodily.

*November 25.*

Mr. Newbolt read a paper on 'Osteotomy.'

He began by giving a short history of the operation, which was first performed in 1852. The principal deformities for which it is now done are—

- (1.) In cases of genu valgum;
- (2.) For rickety curvature of bones;
- (3.) For ankylosis of joints in bad position;
- (4.) For varieties of clubfoot which have resisted other modes of treatment;
- (5.) For badly set fractures.

He then described at some length the operation, Macewen's, as actually performed in a case of genu valgum. He considered the operation preferable to the forcible stretching which is occasionally practised, as the latter is frequently followed by constitutional disturbance, and relapses are more common. In very bad cases Macewen's operation is not sufficient: in such cases the best plan to be followed is first to perform Reeve's modification of Ogston's operation, and then, when the wound is healed, to perform a Macewen's-operation.

He next discussed the principal dangers of the operation, viz.:—

- (1.) Wound of the popliteal artery by a fragment of bone.
- (2.) Suppuration of the wound or neighbouring joint.

Mr. Newbolt proceeded to describe a case in which the latter complication arose. He advocated in such cases free drainage by counter openings.

The author then described operations of a similar character for rickety curves of the tibia and fibula, and for ankylosis of hip-joint. The latter, especially in the cases he had seen, had been attended with marked success. The bone was in such cases cut through below the trochanter minor, and great care taken in the after treatment to keep the limb abducted.

He finally related a case in which osteotomy was performed for the cure of a badly set fracture, the patient recovering so completely that, from being a complete cripple, he was declared fit for military duty.

*December 2.*

Mr. Reece showed two back-splints, to illustrate how splints should and should not be made.

Mr. De Lisle showed a microscopic specimen of 'Sarcoma of the Tongue,' which was removed a few days before by Mr. Butlin. The case is one of great rarity, only four others having been described. The growth was a small round-celled sarcoma.

Mr. Murray read a paper on 'Tumours of the Cerebro-Spinal System.'

He stated that in no region of the body are there so many different kinds of new growth found, *e.g.*, fibrous tumours, lipomata, tubercular and syphilitic growths, besides every variety of malignant growth. These may arise from the bony framework, from the meninges, or from the nervous tissue; growths on the nerve-roots usually multiple, but when occurring within the cord, usually single; primary malignant growths always solitary, and they are usually one or other of the varieties of sarcoma. When growing outside the cord, they produce their effect by pressure, not by invasion. He next described the symptoms of tumours of the meninges or the cord, *viz.*, pain, hyperæsthesia, muscular spasm, paralysis, loss of sensation, crossed symptoms; muscular atrophy, largely determined by the site of the lesion; cutaneous reflexes and myostatic irritability, usually excessive, unless the lesion is situated in the lumbar enlargement or cauda equina, when they are absent.

An interesting case of tumour growing in the lumbar enlargement and cauda equina was then related. It was complicated by similar but smaller growths in the brain. The growth proved to be a gliosarcoma.

The author then discussed at some length the differential diagnosis from (1.) Caries of the spine; (2.) Hypertrophic pachymeningitis in the cervical region; (3.) Chronic transverse myelitis. With regard to treatment, iodide of potassium and mercury were the only drugs of any value, and these were given with the hope that the case was syphilitic.

He then passed on to tumours of the brain, the symptoms of which he discussed under 'general' and 'localising.' He illustrated these symptoms by quoting several cases of interest which had come under his own observation.

Case A.—A round-celled sarcoma, with melanotic deposit, which occupied the left cerebral hemisphere.

Case B.—A gliomatous tumour in cerebellum.

Case C.—A syphilitic growth, patient recovering under the influence of mercury and potassium iodide.

*December 9.*

Dr. Habershon opened the medical discussion, his subject being 'Dyspepsia.'

He commenced by giving a short analysis of the physiological processes of digestion, both primary and secondary, mentioning the chief digestive ferments and their uses. Quoting Dr. Brunton, he described the liver as a careful steward storing up the neces-

sary wants of the tissues, and also as a guardian preventing the entrance of noxious products of digestion into the systemic circulation.

After mentioning the main symptoms, he gave a classification of the disease, taking as a basis of classification the causes:—

(a.) Functional dyspepsia, either due to affections of the nervous system—‘atonic dyspepsia’—or to the vascular system, either from congestion or some abnormal quality of the blood.

(b.) Symptomatic dyspepsia, occurring in the course of other diseases.

(c.) Sympathetic dyspepsia.

Functional dyspepsia mainly occurs in old people, and is best treated with nervine tonics and drugs which stimulate the secretion of gastric juice.

The principal diatheses, in which dyspepsia commonly arises from an abnormal condition of the blood, are gout, rheumatism, malaria, anæmia, and albuminuria.

He then briefly touched upon symptomatic dyspepsia. The two main causes are:—(1.) Congestion due to heart-disease; (2.) Congestion due to bronchitis and emphysema.

In the treatment of these varieties the main disease is to be treated.

He finally alluded to sympathetic dyspepsia. Dyspepsia might in some diseases be the earliest symptom, and was often, if not always, due to irritation of the twigs of the pneumogastric nerve, which produced a referred sensation in the stomach.

*December 16.*

Mr. Reece showed a patient in whom the left kidney had been removed by Mr. Baker in 1882 for tuberculous disease. The patient was strong and healthy.

Mr. Murray exhibited Dr. Hensley’s trocar and cannula for tapping pleural effusions.

Mr. Gow read a paper on ‘Pleural Effusion.’

He commenced by giving the cardinal signs of pleural effusion. The mechanism of displacement of the heart was next alluded to; it was shown to be due to the elastic tension of the lung on the affected side being diminished, and so allowing the other lung freedom to act and to draw the heart and mediastinum along with it over to the other side. The difficulties of diagnosis are great in some cases; the only invariable sign is dulness to percussion. Bronchial breathing may be heard over a pleural effusion. He laid great stress on the use of the exploring syringe in cases of doubtful



diagnosis ; the identity of the signs and symptoms in many cases of purulent and serous effusion makes the syringe invaluable.

*January 13.*

Mr. Hankin read a paper on the 'Biology of Bacteria.'

He first showed the relations of bacteria to other fungi, and stated that in discussing their biology it was necessary to consider the life-histories of moulds and yeasts at the same time.

All decay was shown to be due to the action of bacteria. The different methods by which organic matter, such as foods and dissecting-room subjects, were prevented from decaying were shown to be so many ways of preventing the development of bacteria.

Owing to the presence of bacteria, corpses are split up into carbonic acid, water, ammonia, and other bodies. This is of great importance in the economy of Nature, for if it did not occur, the life of plants, and thus indirectly that of animals, would be impossible.

Bacteria were stated to be able to act as ferments. The action of formed, organised, or insoluble ferments, such as many bacteria, was contrasted with that of unformed or soluble ferments, such as those found in the digestive secretions.

The remarkable case of a bacterium which could live on a perfectly insoluble salt, such as tartrate of lime, was mentioned. Bacteria not only had the power of producing ammonia from dead bodies, but also compound ammonias. Many of these substances were alkaloids, and the particular alkaloids thus formed were called ptomaines. Some of them had great similarity to morphine and other poisons. Their study was, therefore, important from a medico-legal point of view.

Most ptomaines were poisons, and the probability that bacteria produce disease by means of the ptomaines they secrete was mentioned.

*January 20.*

Mr. Spencer read a paper on 'Dressing Wounds.'

An aseptic system of dressing aims at the avoidance of supuration and the leaving of the wound undisturbed. Union by first intention occurs in the protected clean wound.

Contact of micro-organisms with the wound is prevented at the operation by special cleaning of the skin ; the wound is washed out with an antiseptic lotion ; all the blood is removed from the deep surfaces of the wound ; the wound is carefully united, and a drainage tube is put in. Iodoform is sprinkled on the surface

of the wound, and a plentiful supply of gauze-dressing covers all, and is firmly applied by a bandage.

Thus infection from the skin is prevented by cleanliness. The antiseptic lotions tend to kill some germs and hinder the development of others. No easily decomposed blood-clot is left between the surfaces. The drainage tube prevents any serum from collecting in the wound. The iodoform, with the gauze-dressings, prevents the discharges from decomposing, while the wound is kept dry and clean. The firm bandage keeps the deep surfaces of the wound in apposition, and the whole at rest. This bandage need not be changed for ten days or a fortnight. Mr. Willett kept an excision of the knee undisturbed for fifteen days. All surgeons have now adopted an aseptic system. Some few consider that cleanliness is sufficient in most cases. They base their argument on results. But the great majority of surgeons, in adopting systems of dressing resembling more or less the one which has been described, base their procedure also on results.

*January 27.*

Mr. L. E. Shore read a paper on 'Coagulation of the Blood.'

He commenced by pointing out the importance of the subject, and referred to the number of observations made by the ancients. He then proceeded to give reasons for regarding not only the red corpuscles, but the plasma of the blood as living, and regarded coagulation as the death of the blood.

The author contended that coagulation of the blood was essentially the same phenomenon as the coagulation of muscle, viz., rigor mortis, and showed that when all protoplasm dies, a coagulation takes place.

He assigned fibrin to the globulin class of proteids, which class he divided into two divisions, according to solubility in saline solutions, and considered that the chemical change in natural coagulation was from a globulin easily soluble to one soluble with difficulty.

He then gave a brief account of the recent researches of Wooldridge, which tend to show that no ferment is concerned in the process, and that a proteid body, lecithin, which is obtained by him from lymphatic glands and other structures, is intimately connected with the phenomenon.

He also referred to the formation of solid protoplasmic-formed elements out of the plasma by the application of cold, and pointed out the strong evidence this affords that the blood is living.

He then proceeded to consider the changes in the amount of fibrin and in the rate of coagulation in different diseases. He

referred to anæmia, chlorosis, leukæmia, and to several acute inflammatory conditions, and to fevers; and considered it probable that some such substances being present in hæmophilia, purpura, and scurvy, may affect the coagulability of the blood, and account for the hæmorrhagic condition.

He then gave some account of the causes of intravascular coagulation, and explained some phenomena in the light of Wooldridge's researches, and concluded by referring to the importance of the subject with reference to the treatment of aneurysm.

*February 3.*

The surgical discussion on the medical treatment of surgical diseases was opened by Mr. Stephen Paget.

Mr. Paget opened the discussion by remarking that medical treatment consisted of two things—the regulation of diet and mode of living, and the administration of drugs. Certain surgical diseases were then discussed, in which drugs are certainly beneficial :—

(1.) Surgical diseases of children, rickets, scrofula, and syphilis. The author gave a very vivid outline of the origin of rickets in the London baby, and gave a short account of the rational diet for children.

(2.) Gonorrhœa. Mr. Paget condemned the routine practice of active purgation. In the acute stage all medicine was useless.

(3.) Syphilis. There should be no delay in putting patients on a mercurial course as soon as the disease is recognised. He condemned the system of hypodermic injection of mercury, and also of inunction.

(4.) Surgical cases, where gout or rheumatism play a part, such as eczema.

(5.) Malignant disease beyond surgical treatment. In cases of large fibroids, Thornton has pointed out that a spare diet is of great value, and the same applies to numerous cases of malignant disease. Opium does not always agree, and in such cases the author found cannabis indica of the utmost value.

*February 10.*

Mr. Gabriel read a paper on 'Empyema.'

He considered its various causes, which he classed under four main heads :—

(1.) Injuries to the chest-wall.

(2.) Spread of inflammation from neighbouring organs.

(3.) Change in the character of serous effusions.

(4.) Tracking of pus from other organs into the air-passages.

He advocated the use of the exploring syringe in all doubtful cases as a means of diagnosis. He then showed how some cases, if left to Nature alone, will eventually recover. But he insisted on this being a rare occurrence. Aspiration was strongly advised as the first measure to be adopted in all cases unless the pus was foetid.

The incision was next adverted to, and the point to be selected for such incision, and the methods of making it were considered in detail.

Washing out the pleura, in all but foetid cases, was condemned, and resection of pieces of one or more ribs was mentioned, with the indications for its performance.

He narrated cases in which these various operations had been performed, and after summing up the treatment of foetid and simple cases, the paper concluded by a reference to statistics to show the lessened mortality which had resulted from modern methods of treatment.

*February 17.*

Mr. Gardner showed specimens of the new cardiac tonic 'Strophanthus,' and gave some interesting facts concerning the drug.

Mr. Drage then read his paper on 'Inflammation and Congestion of the Cervix Uteri.'

He began his remarks by referring to the treatment of the disease.

He deprecated resorting to local measures until general treatment had had a good trial. One of the chief points to be borne in mind was that the bowels were generally constipated, and that this condition tended to aggravate the complaint. Mild purgatives then formed the most important part of the treatment, and with them he employed tonics, gentle exercise, and rest in the recumbent position.

With respect to local treatment, the erroneous term 'ulceration of the neck of the womb' had led to many unnecessary measures being adopted, most of which only tended to aggravate the disease. Such were caustics and the actual cautery. He highly deprecated any resort to such measures. As a rule, a slightly astringent injection sufficed, which probably acted more by its cleansing effects than in any other way.

He then mentioned a new mode of treatment which he was trying, namely, 'electrolysis.' As yet, he had used it in only six



cases, but the beneficial results which had followed this mode of treatment in all gave him great encouragement for the future.

*February 24.*

Dr. Calvert read a paper on 'Peripheral Neuritis.'

Having defined the term peripheral neuritis, he pointed out that it applied to a single as well as a multiple inflammation of nerves; but that lately the denotation of the term, at least in general use, had contracted, so that to-day by peripheral neuritis most people meant the disease which more strictly should be called 'multiple peripheral neuritis.'

It was to multiple peripheral neuritis alone that he claimed the attention of the Society.

Dr. Calvert, after briefly discussing the morbid anatomy and morbid physiology of multiple neuritis, enumerated the causes of the disease, pointing out that their classification could not be based on any higher ground than mere convenience to the memory.

Then taking the alcoholic form as a type, he described in detail the symptoms and physical signs, and proceeded to diagnose the disease from various other conditions with which it had been confused, *e.g.*, rheumatic fever, the so-called rheumatic gout, Landry's disease, acute, subacute, and chronic anterior poliomyelitis, locomotor ataxia, cervical caries, cervical tumour, inflammation of the membranes.

Then he discussed the treatment during and after the acute stage, and finally called prominent attention to the hopeful prognosis of peripheral neuritis, contrasting it in this respect with nervous diseases in general.

*March 3.*

The House Physicians' evening was opened by Mr. Murray, who chose as his subject 'Tumours of the Spleen.'

He described minutely a case which had lately been in Mark Ward. The tumour was diagnosed as splenic from its position, its dull note on percussion, its firm consistence, its having a well-marked notch on its anterior border, and from the general symptoms and history of the patient.

The differential diagnosis in these cases lay between an irregular enlargement of the left lobe of the liver, a renal tumour, and new growths in the wall of the stomach or colon.

In the absence of Mr. Haviland, his paper on 'Hepatic Tumours' was read by Mr. F. W. Andrewes.

They were, he said, always firm and resisting. Their lower

edge was always of great diagnostic value. Though always dull on percussion in their greater part, resonance was sometimes to be obtained at their lower edge, owing to intervening intestine. Malignant tumours, he mentioned, often were umbilicated in their most prominent parts. The presence of deranged liver functions, such as jaundice and evidences of portal obstruction, assisted considerably in arriving at a correct diagnosis. A very interesting case of suppurating hydatid cysts of the liver was related, in which one of the cysts yielded a tympanitic note and well-marked succussion splash, owing to the presence within it of pus and the gases of decomposition.

Mr. Sympson then read his paper on 'Omental Cancers.'

These might be—(1.) Primary, in which case they were usually epitheliomata; (2.) Secondary to cancer in any part of the intestinal tract.

Their chief symptoms, in addition to the physical signs which they afforded, were obstruction of the bowels, due to a matting together of the intestines, and an enlarged abdomen without any free fluid in it. Cancer of the omentum had to be diagnosed from tubercular disease of the peritoneum, and the diagnosis was in some cases extremely difficult.

Dr. Calvert then read a paper on 'Renal Tumours.'

He related a very interesting case of a patient, aged 38, with a large tumour diagnosed as renal. On admission, a tumour was found on his left side. The descending colon could be plainly felt passing upwards over its surface, and peristaltic action could be induced in its coats by massage. The tumour seemed to contain a fluid, did not move with respiration, and rapidly increased in size, producing nausea, palpitation, and troublesome constipation. On aspirating it, a fluid of specific gravity 1010, and containing about one-sixth of albumen, some nitrogenous substances, and a few blood-discs was drawn off. The urine, which until then had been free from albumen, contained some for a few days afterwards.

The patient never had any symptoms of pyelitis, hæmaturia, bladder-growth, and the ureter was never palpable.

### *March 10.*

Mr. Gardner then read his paper on 'Spinal Caries.'

He began by insisting on the importance of that disease, adducing three reasons, viz., its frequency, the importance of its early diagnosis, which is so frequently overlooked, and the necessity for prompt and proper treatment, the results of which are so favourable. He then sketched the course of the disease, contrasting on

the one hand the frequency of death, with its miserable array of antecedent symptoms, and on the other the completeness of the recovery when that occurs. After briefly glancing at its pathology, he enumerated the symptoms, calling especial attention to their number and variability. He classified these symptoms into those due to the disease of the bone, those due to damage to the nerve-roots, those due to affection of the cord itself, and, lastly, those due to resulting abscess. He pointed out how those sets of symptoms have no necessary relation to one another, the nervous symptoms being often absent, while occasionally they are conspicuous long before any curvature appeared. He next considered the question of diagnosis, particularly of diagnosis before any curvature appeared. He laid most stress on the importance of symmetrical pains, the gait and bearing of the patient, local tenderness on the spine, especially to lateral pressure, the way in which the affected part of the back is held rigid, and the increased reflexes.

He then pointed out the difference between an antero-posterior curve due to rickets, and one due to true caries, and considered the diagnosis of the cause of the nervous symptoms, whether due to inflammation or mere compression.

In discussing the prognosis, he gave it as his opinion that, except in cases with psoas abscess, it was generally hopeful, recovery often taking place in what are apparently the worst cases.

He then briefly sketched the history of the treatment, showing how before Pott's time it went untreated; how Pott treated it with considerable success by means of issues; how Hilton first established the law that rest was the essential point, which rest he secured by keeping the patient lying on his back; and finally, how Sayre, by means of his plaster-jacket, procured local rest for the affected part.

After dwelling upon the importance of constitutional treatment, he deprecated counter-irritation. Allowing that rest was the essential thing, he argued that it was local rest and not general rest that was required, and pointed out the inadvisability of keeping a child confined to bed, particularly among the poorer classes, when it is deprived of air and sunshine, and its surroundings are so distressing. Summarily dismissing the machines of the instrument-makers, he stated that the desired object was best obtained by Cocking's poroplastic and Sayre's plaster-jacket, and proceeded to contrast the two. He pointed out that the essential points were to prevent movements of the diseased bones, to support the upper part of the body, which being no longer supported, has a tendency to fall forwards, and to throw the weight off the centra on to the articular processes. This is to be done by taking a fixed point of

support from the pelvis, and making the jacket high and strong in front and low and strong behind.

He argued in favour of Sayre's jacket chiefly because it can be made for himself by every practitioner; other points in its favour being its absolute rigidity, its perfect fit, and its cheapness. Having answered the objections to it on the score of weight, uncleanness, &c., he proceeded to show how very successfully it had been used, notably at the Children's Infirmary, Liverpool, under the auspices of the late Dr. Oxley. He then read a brief account of some of Dr. Oxley's cases.

He then described in detail how the jacket should be made, calling especial attention to the advantage of having two vests, so that the one next the skin could be changed by tacking a clean one to its lower end, and pulling it over the head, thus drawing the new one into its place. He also insisted on the necessity of making the jacket high in front, and carrying it down low behind, while over the abdomen it should be quite loose; also of fixing it firmly around the pelvis.

He concluded by alluding briefly to the much-debated question of the treatment of spinal abscesses.

### *March 17.*

#### *Annual General Meeting.*

The annual report and financial statement for the year were read and adopted.

The voting for the election of committeemen for the ensuing year then took place. Messrs. Gill and Elliot were elected scrutineers. The result of the voting was as follows:—

*Presidents*—Dr. W. J. Gow and Mr. A. Lyndon.

*Vice-Presidents*—Mr. W. Balgarnie and Mr. J. G. E. Colby.

*Secretaries*—Mr. J. Wilkie and Mr. L. W. Andrews.

*Committeemen*—Mr. C. R. Stevens and Mr. A. O. Hubbard.





DESCRIPTIVE LIST  
OF  
SPECIMENS ADDED TO THE MUSEUM  
DURING THE YEAR 1887.



# SPECIMENS ADDED TO THE MUSEUM

*During the Year ending October 1, 1887.*

BY

D'ARCY POWER.

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DURING the year which has just terminated, the Museum attached to the Hospital has received several valuable bequests, in addition to a large number of interesting preparations which have been obtained from the Wards and the Post-mortem Room. Mr. James Berry has presented a most remarkable series of photographs illustrating many diseases of the thyroid gland. Mr. Odling has contributed a collection of vesical calculi which he removed at various times during his residence at Shiraz in Persia. The late Sir George Burrows, Dr. Martin, Dr. Bowes, Mr. Maude, and others, have sent instruments of great historic value to form the nucleus of a series of obsolete medical and surgical instruments, similar to that which has already been collected in the Midwifery division of the Museum. The School generally, and the Pathological Department in particular, have sustained a great loss by the departure for Sydney of Mr. Godart, who was in the service of the Hospital for nearly forty years.<sup>1</sup> By the provision of a properly adapted case for the reception of many of his drawings, it is hoped that the results of his skill may long be preserved to the School. Amongst the ordinary additions made during the year, it will be found that Series viii., illustrating the diseases of arteries, and Series xviii., illustrating the diseases of the intestines, have been very greatly extended.

*Dec. 1887.*

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## SERIES I.

### DISEASES OF BONE.

101a. Section of a Tibia which has become much thickened and enlarged as a result of chronic osteitis. In its middle and lower thirds is the site of a long-standing ulcer. The cut surface shows that the base has

<sup>1</sup> Since the above was in type, the melancholy intelligence of Mr. Godart's sudden death in Sydney has been received.



undergone much sclerosis, the medullary canal being practically obliterated. The bone is somewhat curved, and was two inches longer than its fellow.

From a man aged 46, who had an abscess on the right shin thirty-five years before his death; the abscess was followed by an ulcer, which never properly healed. Shortly before his death the ulcer developed the characteristics of an epitheliomatous growth, and Carden's amputation was performed.

See *Male Surgical Register*, vol. iii. (1887), No. 1740.

- 164a.** Portions of the Left Fourth Rib, which were exfoliated six months after a slight injury. The larger of the necrosed portions of the rib measures about  $3\frac{1}{2}$  inches in length, and is very jagged at either end; whilst the smaller piece is only half an inch in length.

From a delicate girl aged 13.

See *Female Surgical Register*, vol. i. No. 329.

- 437e.** The Fifth and Sixth Ribs of the Left Side, from a case of sarcomatous tumour following fracture. The ribs are invaded by a fungating mass, which extended into the thorax, depressing the diaphragm, encroaching upon the mediastinum, and pushing the heart bodily over to the right side. The ribs themselves are thickened, and show evident signs of a somewhat recent oblique fracture. Microscopical examination of the new growth shows that it is a round-celled sarcoma.

From a boy aged 13, who had been under treatment during the four months preceding his death for an injury to the left side of his chest, caused by a kick, followed, as was believed, by pleurisy with effusion. The boy's health had been perfect up to the date of his accident, and there was no family history of malignant disease.

See *St. Bartholomew's Hospital Reports*, vol. xxii. (1886), pp. 247-249. 12.

Presented by J. E. Ranking, Esq., M.D.

- 475b.** A Section of the Head and upper portion of the Shaft of the Femur. The medullary cavity of the shaft and neck nearly up to the epiphysis is infiltrated by a new growth. At the lowest part of the femur the growth has extended beyond the bony wall, invading the surrounding muscle and connective tissue, and in parts has ulcerated, so as to leave an irregular cavity. Microscopically the growth is a spindle-celled sarcoma.

From the same case as the preceding (No. 475a). Disarticulation of the head of the femur was performed seventeen months after the amputation in the middle third of the thigh. A microscopic specimen is preserved in Series Iv. No. 21b.

See also *Transactions of the Pathological Society*, vol. xxxviii. p. 288.

Presented by J. Langton, Esq.

#### MULTILOCLAR CYSTIC EPITHELIOMA OF THE LOWER JAW.

- 535a.** A Portion of the Left Half of an Inferior Maxilla removed by operation. The whole of the body and the greater part of the ramus is occupied by a new growth, which appears to have originated in the substance of the bone itself. The two bicuspid teeth are firmly fixed in their normal position; the first and second molars are absent, but the wisdom-tooth is

thrust upwards by the growth, so that it now occupies the base of the expanded coronoid process. The body of the jaw is distended by a tumour, which has thinned and destroyed the compact bone. The growth protrudes both externally and internally, and in the former position has infiltrated the masseter muscle. The section of the body of the jaw shows that the tumour extends as far forward as the canine tooth. The growth is soft and friable, in parts cystic, with its anterior portion definitely encapsuled. In the recent state these cysts contained a brownish blood-stained fluid. Microscopical examination shows that the tumour is a cystic epithelioma. The bone is infiltrated with masses of epithelial cells, which are breaking down in their centre so as to form cavities. The stroma consists of connective tissue.

The patient, a married woman aged 29, had been admitted five years previously on account of a tumour which had grown for seven and a half years on the site of a left lower molar tooth. The tumour was removed by cutting away an outer shell of bone and subsequently gouging out the growth. On re-admission to the Hospital, the left side of the inferior maxilla was found to be very much swollen immediately above the scar resulting from the previous operation. The swelling extended on to the alveolar border of the jaw in such a manner that when the jaws were closed the growth covered the outer aspect of the upper molar teeth, whilst it extended for more than an inch and a half on the inner side of the jaw towards the middle line. The growth was ulcerating at the time when the excision was performed. After the operation the patient made a good recovery.

Sections are preserved in Series lv. No. liib.

See *Transactions of the Pathological Society*, vol. xxxviii. p. 359, and *Female Surgical Register*, vol. iii. (1886), No. 423.

## SERIES II.

### DISEASES OF JOINTS.

**569b.** A Knee-Joint exhibiting well-marked pulpy degeneration of the synovial membrane. The cartilages of both the femur and patella are ulcerated. Microscopically the thickened synovial membrane contained abundant deposits of miliary tubercle, though no tubercle bacillus could be detected.

From a lady aged 67, who experienced on October 10th a sudden attack of pain in the knee, followed by an effusion which, on account of the subsequent ecchymosis over the joint, was supposed to have been of blood. The symptoms of chronic arthritis subsequently set in, and the limb was removed on March 10th in the following year. Two months before amputation the joint was tapped, and clear synovial fluid was removed. During the whole period of the joint-disease the patient got up daily, and absolutely refused to wear any splint.

A drawing of the joint as it appeared immediately after removal is preserved in Series lvii. No. 40b.

See *Transactions of the Pathological Society*, vol. xxxviii. p. 314.

Presented by Thomas Smith, Esq.

**621a.** The Upper Third of the Right Femur from a case of hip-joint disease, apparently commencing as an inflammation of the epiphysis. The shaft is atrophied, and measures less than half an inch in diameter

The cartilage covering the head of the bone is almost entirely worn away, the bone itself being carious upon its upper and anterior surfaces. There is a small cavity in the head, situated upon its anterior surface at the line of junction with the epiphysis.

Removed by Furneaux Jordan's amputation from a boy aged 8 years, who had hip-joint disease with diffuse suppuration of the thigh. The duration of the disease was eighteen months.

See *Male Surgical Register*, vol. i. (1886), No. 3410\*.

- 645a.** The Right Hand of a woman which during life exhibited a marked instance of "Heberden's nodes." The terminal phalanges are united by bony ankylosis. The two distal phalanges of the fourth finger have been divided longitudinally to show how complete has been the synostosis. In the neighbourhood of the joints deposits of urates can still be seen; these deposits were much more abundant before the maceration.


From a woman aged 63, who died of cancer of the gall-bladder. During life it was recorded that "the joints of the fingers, and especially those of the right thumb, have well-marked Heberden's nodes. These nodes appear to be simply exaggerations of the normal prominences of the phalanges. The joints between the two last phalanges of the index and middle fingers of the right hand, and the same joint in the left hand, are ankylosed. The joints of the metatarso-phalangeal joints of both great-toes were somewhat enlarged and glazed. There were no tophi, nor was there any rheumatic or gouty history in the family of the patient."

Sir Dyce Duckworth, showing the hand before the British Medical Association at Belfast, stated that it was taken from the body of a woman who presented marked examples of Heberden's nodes, believed to be rheumatic during life, but shown to be, as he believed, solely due to gouty and uratic diathesis. See *British Medical Journal*, 1884, vol. ii. p. 270.

See *Mary Ward Book* for 1884, No. 798, and *Medical Post-Mortem Register*, vol. xi. p. 83.

Casts of both hands are preserved in Series lvi. No. 23b.

- 690b.** A Patella from a case of commencing Osteo-Arthritis occurring in a woman aged 52. The cartilage covering the upper two-thirds of the articular surface is fibrillated in such a manner as to form a series of tuft-like projections. At the upper portion of the external facet this process is so advanced as to have led to the entire disappearance of the cartilage, while along the inner border of the internal facet is a distinct "lip" of new bone.

[See *Female Surgical Register*, vol. v. (1887), No. 380. 

- 692a.** The Lower Portion of the Femur with the Patella, showing the changes which result from osteo-arthritis. The cartilage is eroded over a large portion of the articular surface, whilst the bone is dense and lipped. The synovial membrane is slightly swollen. In the joint was a single loose piece of cartilage, which is suspended above the specimen.

From a waterside labourer aged 49, who died from the results of a long-standing stricture of the urethra.

See *Male Surgical Register*, vol. i. (1885), No. 3230.

- 723a. A Loose Body removed from the Knee-Joint. It is irregular in shape, and closely resembles the ecchondroses which occur in the course of osteo-arthritis. The body is roughly pitted on one side, but is smoother and nodulated upon the opposite surface.

### SERIES III.

## INJURIES OF BONE (FRACTURES).

### INCOMPLETE SEPARATION OF THE LOWER RADIAL EPIPHYSIS.

- 758a. A Section of the Lower End of the Radius of a child. As a result of injury, the epiphysis has been incompletely separated from the bone. This separation is complete along the radial border, where a bristle has been passed between the bone and the cartilage, but towards the ulnar border the line of injury has run obliquely, and consequently the bone has been fractured above the epiphysis.

From a girl aged 3 years, who fell from a height of 30 feet on to the pavement. She died two days after the injury.

See *Female Surgical Register*, vol. v. (1885), No. 1167.

- 807b. A Portion of the Right Femur and Tibia, showing the condition of parts in an unsuccessful case of Macewen's operation of osteotomy for the relief of genu valgum.

An open osteotomy wound was visible in the inner side of the thigh, whilst on the outer side was a wound with a protruding piece of bone. There was no retained pus. On cutting into the limb, the conditions seen in the specimen were observed. There is no attempt at repair going on in the femur at the seat of fracture. The upper end of the lower fragment is drawn upwards and outwards; it protruded through the skin on the outer side of the thigh. The lower part of the upper fragment has slipped along the inner surface of the internal condyle until it rests upon its lower surface near the adductor tubercle. A small portion of the extremity of the upper fragment has necrosed, but it has not separated. The section of the femur shows that the epiphysial line is rather more sinuous than usual, but that it is otherwise normal. There is hypertrophy of the inner condyle. The outer tuberosity of the tibia is on a lower level than the inner tuberosity, and it slopes backwards in an unusual manner. The section of the tibia shows that the line of the epiphysial cartilage slopes downwards beneath the external tuberosity. The shaft of the tibia appears to be normal.

- 807c. A Portion of the Left Femur and Tibia, from the same case as the preceding, exhibits the repair which has taken place after the performance of Macewen's operation of osteotomy for the relief of genu valgum.

The femur has been divided transversely at a point  $3\frac{1}{4}$  inches above the knee-joint, and has again united without the intervention of provisional callus. The axis of the lower fragment is not, however, in the same axis as that of the upper portion or shaft of the bone.

In the head of the tibia the external articular surface is on a lower level than the



internal surface, and it slopes backwards in an unusual manner. The section of the tibia shows that the line of the epiphysial cartilage slopes downward beneath the external articular surface. The shaft of the tibia appears to be normal. Microscopical examination of the line of fracture shows that the union is chiefly due to fibrous tissue, which in some parts is still cellular, whilst in others it is firm and dense. Calcification is taking place throughout the line of fracture and beneath the periosteum. There is no appearance of any cartilage.

From a man aged 18. Macewen's operation had been performed upon both femora three months before death. The operation was followed by suppuration and necrosis of the right femur, the left leg healing in the ordinary manner.

See *Male Surgical Register*, vol. iii. (1886), No. 3764\*.

- 900c. Ribs from a Mummy found in a tomb at the ancient Memphis. They had been fractured and are reunited with superabundant formation of bone. (In Case H.) c. 42.

- 925c. The Lower End of the Radius, showing a comminuted fracture extending into the wrist-joint. The upper end of the fractured bone is slightly impacted into the lower fragment, which has undergone much comminution. The fracture has extended horizontally across the centre of the carpal articular surface, and the dorsal portion has been again divided transversely near its ulnar margin. The ulnar facet is also transversely divided, but not through its whole extent. The main line of fracture is irregular, and several pieces of bone were completely detached.

The injury occurred in a man who fell from a window, a height of about eight feet. He died from the effects of a laceration of the liver and other injuries which he then received.

See *Kenton Ward Book*, vol. ix. p. 209.

- 925b. The Lower Portion of the Radius, which has sustained a fracture extending into the wrist-joint. The upper fragment is well impacted into the lower. As a result of the impaction, the lower fragment is cleanly divided by a horizontal and two longitudinal fractures into four pieces, which are only held together by ligament. The articular surface which corresponds to the semilunar bone has entirely disappeared. The styloid process of the ulna has been torn off.

From a man aged 43, who fell from a first-floor window. He died, without regaining consciousness, upon the sixth day.

See *Male Surgical Register*, vol. v. (1884), No. 1038.

- 925c. The Lower Portion of the Radius, which has been fractured immediately above the wrist-joint. The lower fragment is again divided into several pieces, as in the preceding specimens. Some of the fissures extend into the carpal articulation.

- 925d. A Portion of the Lower End of the Right Radius, which has sustained a fracture. The fracture runs obliquely upwards and downwards. It extends into the wrist-joint by a wide fissure situated at the junction of the quadrilateral with the triangular articulating surface.

From a woman aged 65, who was knocked down by a heavy van, the wheel passing over the chest and arm; she sustained such injuries that she died two days later.

See *Female Surgical Register*, vol. v. (1885), No. 641.

This, with the three preceding specimens, was exhibited before the Pathological Society. See *Transactions of the Pathological Society*, vol. xxxviii. pp. 253-257.

## FRACTURED PELVIS.

- 934a. A Comminuted Fracture of the Pelvis. The right os innominatum is more completely broken than the left. The right acetabulum is broken into several pieces, and the right femur has sustained an extra-capsular fracture of the neck, involving the great trochanter. The right lateral mass of the sacrum is completely separated, whilst on the left side the horizontal ramus of the pubes and the ascending ramus of the ischium are fractured. (In Case H.)

From a man aged 58, whose diaphragm and peritoneum were ruptured, and who had in addition five fractured ribs. He threw himself from a window on to the pavement, a distance of about twenty feet.

See *Male Surgical Register*, vol. iv. (1887), No. 1203.

- 959a. The Head and Neck of the Right Femur, showing an impacted extra-capsular fracture. The neck of the femur has been driven into the great trochanter to such a depth that it is almost completely buried. In the recent specimen the head appeared as if it was directly attached to the great trochanter, and was so driven downwards that only the tip of the finger could be placed between its lower surface and the lesser trochanter. The anterior portion of the great trochanter is split off from the shaft of the femur, and is only united to it by the periosteum. It has been raised to show the impaction of the neck.

From a man aged 76, who was knocked down in the street by a van. There was some ecchymosis about the right hip; the limb was everted, and was two inches shorter than its fellow.

See *Male Surgical Register*, vol. ii. (1885), No. 3872.

## SERIES IV.

### INJURIES OF JOINTS (DISLOCATIONS, &c.).

#### DISLOCATION OF THE STERNUM.

- 1018a. The Upper Part of the Sternum, showing a dislocation of the manubrium upon the gladiolus.

From a man aged 40, who was run over by a hansom cab. His ribs on the right side had been fractured from the third to the tenth inclusive, and on the left side from the third to the sixth. In connection with the fracture of the third left rib an abscess had formed, which ruptured into the pleura and set up pleurisy and bronchopneumonia, of which the patient died.

See *Male Surgical Register*, vol. iv. (1887), No. 288.

- 1019a. The Left Shoulder-Joint of a man aged 41, who was killed by falling from a scaffold. The humerus at the time of the accident was dislocated, so that it lay beneath the coracoid process, whilst at the same time the great tuberosity was torn off. The biceps tendon is seen to be displaced from its groove and to be constricted at one point, owing to the pressure to which it has been subjected between the head and the margin of the glenoid cavity. None of the muscles around the joint appear to have been much torn.

#### CONGENITAL DISPLACEMENT (SO-CALLED DISLOCATION) OF THE HIP.

- 1050a. A Portion of the Right Innominate Bone with the head and neck of the Femur, from a case of congenital dislocation of the hip.

The ilium has been separated from the pelvis by a section carried obliquely through the obturator foramen at a point corresponding with the lower part of the acetabulum. A triangular space occupies the position of the normal acetabular cavity, but unfortunately only the apical portion is preserved. This space is partially covered with a thin layer of cartilage, the bone being in part bare. Upon the dorsum of the ilium, immediately above the apex of the triangle, is an irregularly depressed surface, which, in the recent specimen, was covered by fibrous tissue, upon which the head of the femur rested during life. No attempt at the formation of a socket, however, has been made, nor has any new bone been thrown out in this situation. The iliac segment of the acetabulum, which extends from a point below the anterior inferior spinous process of the ilium obliquely backwards to the ischium, is entirely absent, and to this is to be attributed the triangular depression representing the acetabulum. The curvature of the sciatic notch is remarkably altered owing to the extreme elongation of the lower and posterior portions of the innominate bone. As a result of this elongation, the antero-posterior diameter of the bone extending from the spine of the ischium to the ilio-pectineal line is much shortened. There is a great smoothness and absence of muscular ridges on the ilium. The head of the femur is diminished in size, and is much altered in shape. It is ovoid and is flattened posteriorly, but it is everywhere covered by a layer of healthy articular cartilage, which shows no signs of ulceration. The ligamentum teres is completely absent, and there is nothing which would lead to the supposition that it had ever existed. The neck of the bone is shortened, and appears to be twisted slightly backwards upon its axis. Before maceration the head of the bone lay in a well-defined capsular ligament.

From a girl, Caroline Gibbs, æt. 13 years, who died in St. Bartholomew's Hospital on the 7th April 1884 of a cancer of the stomach, which was exhibited at the Pathological Society. (See *Transactions of the Pathological Society*, vol. xxxvi. p. 195.) The lameness was observed on admission, and in answer to inquiries after death, when the condition of the hip-joint had been ascertained, the father stated that this was the first child. The labour was easy and natural, no interference being required. Nothing wrong with the leg or hip-joint was noticed before the walking period. The lameness was not very noticeable until she was about three years

of age. There had been no accident nor any symptoms or suspicion of hip-joint disease; no pain on motion at any time. No other member of the family had been similarly affected.

See *Medical Post-Mortem Book*, vol. xi. p. 21. A drawing of the specimen will be found in Mr. W. Adams' work "On Congenital Displacement of the Hip-Joint," Churchill & Co., London, 1887.

See also *Transactions of the Pathological Society*, vol. xxxviii. p. 295, and plate xv.

## SERIES V.

### DISEASES AND DEFORMITIES OF THE SPINE.

#### SACRO-ILIAC DISEASE.

1090a. A Pelvis with the last two Lumbar Vertebrae, from a case of advanced sacro-iliac disease. The right iliac bone is lighter and more porous than the left, and its muscular ridges are less well marked. The auricular surface is completely devoid of cartilage, and is honey-combed by a process of carious inflammation, to such an extent that a large circular aperture has been formed through its centre. The rough surface for the sacro-iliac ligaments has undergone a similar absorption, though to a less extent. The caries extends forward along the inner and middle lips of the crest of the ilium for nearly two-thirds of its extent, and downwards as far as the brim of the true pelvis.

In the sacrum the whole of the right ala and lateral mass has undergone absorption, and the caries has extended across the anterior surfaces of the first and second sacral vertebrae as far as the sacral foramina of the left side. As a result of the inflammatory changes, spicules of new bone connect the fifth lumbar vertebra with the first piece of the sacrum on the right side, and the terminal piece of the sacrum with the coccyx. Posteriorly the caries has caused destruction of the spine of the first sacral vertebra.

The left sacro-iliac synchondrosis appears to be normal, and the symphysis pubis is healthy. (In Case H.)

From a man aged 19, a bricklayer. Nineteen months before his death he had an attack of "rheumatism" in his right hip, and a month later he first felt pain in his sacrum. On admission to the Hospital a year later, an abscess had formed over the right buttock, and great pain was experienced on pressing the ilia together. After opening the abscess, bare bone could be felt over the posterior part of the ilium, and it was subsequently ascertained that the whole of the right side of the sacrum was carious. About two months before the death of the patient symptoms of amyloid degeneration were observed in various organs.

See *Male Surgical Register*, vol. iii. (1886), No. 2433.

1094a. An Atlas and Axis. The odontoid process has been dislocated in such a manner as to leave only a very narrow space for the spinal cord, and the bones have subsequently become ankylosed.

They were found in a graveyard at Aberdeen, and are described by Sir James Page in the *Medico-Chirurgical Transactions*, vol. xxxi. (1848).

The specimen was formerly catalogued as No. 1152.

; Presented by George Banks, Esq.



## SERIES VI.

DISEASES AND INJURIES OF MUSCLES,  
TENDONS, AND BURSÆ.

- 1168a. A Portion of the Gastrocnemius Muscle which has undergone complete fatty metamorphosis. No muscular fibres are anywhere visible, but the inferior surface is covered by the lustrous tendon.

From the leg of a girl aged 26, who for many years had suffered from anterior poliomyelitis.

*Female Surgical Register*, vol. i. (1887), No. 189.

From the same case as Series vi. No. 1198a.

- 1174a. A Portion of a Tumour removed from the Sartorius Muscle. It appears to have grown from the connective tissue between the muscle-fibres. The section of the new growth appears in part to be of a firm fibrous nature, whilst in part it is soft, and has broken down in such a manner as to leave a cavity. The tumour is enclosed in an incomplete capsule, which has allowed of the extension of the softer portion of the growth. The capsule appears to be formed by the condensation of the surrounding connective tissue.

From a woman aged 62. The tumour was of nine months' duration. It was pyriform and obtuse in shape, situated subcutaneously, and growing rapidly. It was slightly lobulated, and before removal it was semi-fluctuating. Microscopically it was found to be a sarcoma undergoing fibroid change. The growth recurred in the neighbourhood of the scar, and extended upwards into the groin. It ulcerated through the skin, bled severely at times, and death by exhaustion ensued a few months after its removal.

Sections are preserved in Series lv. No. 57c.

Presented by George Wilks, Esq., M.B.

- 1205e. The Left Knee-Joint from a case of acute arthritis following the formation of an intermuscular synovial cyst. The under surface of the patella is carious, the cartilage upon it is ulcerating, and for the most part has disappeared. The condyles of the femur and the head of the tibia are in a similar condition. The large cyst at the back of the joint contained a considerable quantity of blood-stained fluid. It communicated with the bursa between the inner head of the gastrocnemius and the semi-membranosus muscles, and so with the knee-joint. The shrivelled remains of an old cyst is seen running along the inner border of the gastrocnemius muscle for about an inch and a half. It communicates by a very narrow passage with the cyst at the back of the knee. The ligaments are all loosened, but they are not destroyed. The cartilages have almost entirely disappeared, and the synovial membrane is pulpy. There was no pus in the joint.

From a man aged 45, in whom the main symptom of the extensive joint-disease was intense pain on the slightest movement or jar to the limb. Sixteen months before admission, the synovial cyst, whose shrivelled remains are seen in the specimen, was opened in the calf of the leg. The wound made, with antiseptic precautions

healed by first intention. The knee-joint first became painful six months after the cyst had been tapped. After the amputation the patient made a good recovery.

See *Male Surgical Register*, vol. ii. (1886), No. 2279, and the *Lancet*, vol. ii. (1886), p. 970.

A drawing of the limb is preserved in Series lvii. No. 45x.

- 1205f. The Lower Third of the Right Thigh and the upper portion of the Right Leg, exhibiting a general enlargement of the bursæ in the neighbourhood of the knee. An irregular cystic swelling, which contained serous fluid, in which floated a large number of melon-seed bodies, lies upon the inner side of the joint, occupying in part the position of the bursa, between the semi-membranosus and semi-tendinosus tendons. The cyst is lined throughout by a thin membrane, which forms its wall. It is irregularly hour-glass in shape, the two swellings lying opposite the inner condyle of the femur, and the upper and inner part of the calf respectively, the constriction between the two parts being apparently due to the passage across the cyst of the sartorius and gracilis tendons. Immediately beneath the inner hamstring tendons, the constricted portion of the cyst opens by a tortuous passage into a second dilatation, situated immediately beneath the popliteal vessels and nerve, in close contact with, but not opening into, the bursa, which lies under the inner head of the gastrocnemius. From this point the cyst can be traced beneath the gastrocnemius muscle, where it dilates into a terminal sac. The popliteus muscle is greatly stretched and thinned owing to the dilatation of the bursa beneath it. This dilated bursa is separated from the one previously described by the popliteus muscle, and it does not appear that the two in any way communicate. Neither of the cysts communicate with the knee-joint.

The knee is almost typically affected with tubercular synovitis. The cartilages everywhere appear to be healthy, except for some slight roughening over the external condyle and the corresponding articular surface of the patella. There are neither osteophytes nor echondroses. The ligaments, however, are much frayed and softened, so that they are easily torn. The semilunar cartilages are in part worn away. The synovial membrane is remarkably affected, for from the neighbourhood of the mucosum et ligamenta alaria protrude large, soft, flattened, and leaflike synovial fringes. Some of the processes measure as much as 1 inch or 1½ inches in diameter. Microscopic examination shows that these fringes are the results of tuberculous inflammation, and that they contain masses of tubercle, and in some cases even the tubercle bacilli.

From a man aged 41, a valet by occupation, who died of general tuberculosis. Ten months before his death he observed a swelling on the inner side of his right knee. The swelling was said to have attained its maximum size in two or three days, and the patient was certain that it was not the result of an injury. The cyst was aspirated on two occasions, and synovial fluid with flakes of mucus in it was removed.

See *Male Surgical Register*, vol. ii. (1886), Nos. 449, 1353, 2021, and 2868.

Drawings of the joint are preserved in Series lvii. Nos. 45 v and w.

- 1205g. The Left Elbow-Joint from a man whose arm was amputated for joint-disease in connection with an intermuscular synovial cyst. The

capsule of the joint is distended on both its anterior and posterior surfaces, and it is much thickened as a result of chronic inflammation. The synovial cavity is in communication with the exterior by means of two sinuses, along which glass rods have been passed into the joint. The articular surfaces of the bones are almost entirely denuded of cartilage.

From a man aged 34, a post-office porter, who was admitted on account of a painless swelling in the neighbourhood of the left elbow-joint. It was oval in outline, and was situated immediately above the internal condyle. The swelling was first noticed two and a half years previously. It was tapped, and some brownish viscid synovial fluid containing granular matter escaped, but the cyst rapidly refilled. For nearly twenty months subsequently the swelling underwent but little alteration, but the patient was then readmitted with a large abscess below and to the inner side of the elbow. The abscess was allowed to burst, and it was then washed out and drained, but the patient lost ground, and amputation through the arm was performed, after which he made a good recovery.

See *Male Surgical Register*, vol. v. (1884), No. 2637, and vol. v. (1886), Nos. 1638, 1835, and 2289, and also *St. Bartholomew's Hospital Reports*, vol. xxi. (1885), p. 184, Case No. III.

The three preceding joints were exhibited before the Pathological Society. See *Transactions of the Pathological Society*, vol. xxxviii. p. 381, and plate xxiii. fig. 2.

**1209a.** A Bursa Patellæ, which is somewhat enlarged, and is traversed by a broad circular bar of fibrous tissue.

From a woman aged 25, who had observed the swelling for nine months. She had fibrous tumours below the right olecranon process and on the right shin; the opposite bursa patellæ was also enlarged.

See *Female Surgical Register*, vol. iii. (1887), No. 1434.

## SERIES VII.

### DISEASES AND INJURIES OF THE PERICARDIUM AND OF THE HEART.

#### INJURIES OF THE PERICARDIUM.

**1234a.** A Portion of the Pericardium, showing a large oval aperture with rounded edges. The aperture, measuring about  $1\frac{1}{4}$  inch by 1 inch, was situated near the apex of the heart, at the posterior surface and on its left side.

From a man aged 58, who fractured several of his ribs and sustained other injuries by falling a distance of twenty feet three weeks before his death. The patient had pericarditis, but the injury which caused the perforation in the pericardium appears to be of older date than that which caused death.

See *Male Surgical Register*, vol. i. (1885), No. 3807.

**1248b.** The Heart from a case in which the right ventricle ruptured spontaneously. About half-way down the anterior surface of the right ventricle is a discoloured patch of muscular tissue perforated by two

small apertures. In the recent condition one of these apertures was filled with a small piece of soft blood-clot.

From a woman aged 71, who was admitted into the Hospital with diabetes. At the autopsy the pericardium was entire, but was filled with fluid blood. The aorta was highly atheromatous. The skull-cap was greatly thickened.

The calvaria is preserved in Series i. No. 296a.

See *Medical Post-Mortem Book*, vol. xi. p. 173.

- 1299b. The Heart removed from a girl aged 20, who had multiple aneurysms of the arteries of the extremities following the formation of emboli. The organ is the seat of ulcerative endocarditis, and it appears to have been diseased for a considerable period before death. The aortic valves are covered with vegetations and calcareous matter. The sinuses of Valsalva are dilated so as to form aneurysmal pouches.

For further details and a history of the case, see Series viii. Nos. 1460 b, c, d.

- 1299c. A Heart affected with Ulcerative Endocarditis. The aortic valves are extensively ulcerated, the cusps being ragged and in great part destroyed. Shreds of decolorised and recent blood-clot adhere to the ulcerated surfaces. An ulcer has penetrated the mitral valve, and a clot is adherent to the diseased tissue in the left auricle.

From a man aged 32, who caught a cold three weeks before admission to the Hospital. The cold commenced with a severe rigor and diarrhœa. He subsequently developed symptoms of septicæmia, and died a month after the first onset of the disease.

See *Male Surgical Register*, vol. i. (1885), No. 2789.]

## HEART FROM ANGINA PECTORIS.

- 1306a. The Heart from a man aged 56, who had suffered from repeated attacks of angina pectoris. The organ weighs  $21\frac{1}{2}$  ounces. All its cavities are dilated and hypertrophied. The aortic valves are shortened and thickened, and they had upon them two soft growths which could readily be detached. The orifices of the coronary arteries are extremely small, a glass rod has been passed into them, and they have been dissected out for a part of their course. The aorta is very atheromatous. The chordæ tendinæ of the mitral valve are shortened and thickened, but there are no adhesions and no growths. The cords therefore appear as if the shortening were due to some malformation and not to morbid change.

See *Medical Post-Mortem Book*, vol. xi. p. 181.

- 1359c. A Portion of the Left Ventricle of the Heart with the commencement of the Aorta. The aortic valves are thickened and stretched, and immediately above them is an aneurysm of the size of a Tangerine orange. The aneurysm rested upon the right auricle, but was not situated wholly within the pericardium. Its wall is lined with numerous calcareous plates, but it contained no clot. The opening of the coronary artery is situated at some distance back in the aneurysm.

From a woman aged 46, who was never known to have had rheumatic fever. She was reported to have suffered for four years from a "bad heart."

See *Faith Ward Book*, 1886, p. 174.



## SERIES VIII.

## DISEASES AND INJURIES OF ARTERIES.

**FUSIFORM ANEURYSM OF THE AXILLARY ARTERY.**

1452a. A Portion of the Left Subclavian and Axillary Arteries. The commencement of the third part of the subclavian has been tied with a silk ligature, and is filled with clot for half an inch from its end. The axillary is dilated into a fusiform aneurysm, which extended for five inches along the axillary trunk. In the recent state it contained a very little old clot and some recent soft clot.

From a man aged 54. The subclavian was tied in the third part of its course for an aneurysm of the axillary artery in the axilla. The artery was large at the seat of ligature, and was slightly adherent to its sheath, but no difficulty was experienced in performing the operation. A slightly flattened kangaroo tendon was used. The artery was tied in two places, with an interval of about two-thirds of an inch between the two ligatures, and the vessel was divided. Half an hour after the operation violent hæmorrhage occurred, which was controlled with difficulty by means of pressure. It was found that the ligature had slipped off the proximal end of the divided artery. A silk ligature was applied, but not before a large quantity of blood had been lost. The patient died the same night.

See *Male Surgical Register*, vol. ii. 1887, No. 247.

1460b. The Arteries of the Lower Extremities of a girl who had multiple emboli followed by the formation of aneurysms. The right common iliac artery near its seat of bifurcation contains a calcareous embolus, which is kept in place by a loop of white silk. The arterial wall immediately round the embolus is ulcerated, thinned, and expanded. The greater part of the external iliac and the upper part of the femoral is occluded by recent clot, which resulted from the ligature of the common femoral artery in Scarpa's triangle shortly before death. The right femoral and popliteal arteries are patent and apparently healthy, but the posterior tibial opens by a small ulcerated aperture, through which a blue glass rod has been passed, into a large false aneurysm of the calf, which is formed by the condensation of the soft tissues of the organised blood-clot.

The left external iliac artery presents an aneurysmal dilatation, which is apparently of recent date. Lower down, both this artery and the common femoral are entirely occluded by calcareous matter and by old decolourised clot.

From a girl aged 20, who was admitted into St. Bartholomew's Hospital suffering from aneurysmal swellings at the bend of the right elbow and in the right popliteal space, respectively of three and four weeks duration. The heart was diseased and the aneurysms were considered to be of embolic origin. After treatment by rest and pressure, which at first appeared to be beneficial, the swelling in the arm rapidly increased, in such a manner as to render it probable that the aneurysm was becoming diffused. On this account the brachial artery was tied above the bend of the elbow, the vessel being secured by two ligatures and divided between them. The operation was followed by cessation of pulsation and slight diminution in the size of the aneurysm. Within a few days the popliteal swelling also began to extend; the

superficial femoral artery was therefore tied in Scarpa's triangle in the same way as the brachial, and with equally good results.

Six weeks after admission the patient had a sudden attack of left hemiplegia, with pain in the right thigh and leg, followed by complete loss of pulsation in all the arteries of the right lower extremity. The aneurysmal swellings gave no further trouble and slowly decreased in size. The patient became weaker, and died eight weeks after admission. A post-mortem examination showed that the aorta at one spot was almost completely ulcerated through. The spleen and kidneys were scarred by the lodgment of emboli.

See also Series vii. No. 1299b, and for drawings, Series lvii. Nos. 108 a, b, c, d, e, f; and *Transactions of the Royal Medico-Chirurgical Society*, vol. lxx. p. 117.

**1460c.** Portions of the Right Brachial, Radial, and Ulnar Arteries, from the same case as the preceding. The swelling is formed by an aneurysmal sac, which has mainly resulted from the condensation of the surrounding soft tissues, but it is lined by old blood-clot. The sac communicates with the brachial artery by means of a small ulcerated aperture situated just above the bifurcation of the vessel. In the recent state this opening was occupied by clot, but a blue glass rod has now been passed through it to render its situation more apparent. The radial and ulnar arteries immediately below the opening both contain calcareous emboli, but of these the one which occupies the latter vessel is seen as a small white patch.

**1460d.** The Arteries of the Base of the Brain, removed from the same patient as the preceding. The branches of the right middle cerebral are plugged in several places by recent emboli.

**1487a.** The Heart and Aorta, with a portion of the Thoracic Wall, showing the seat of an aneurysm and the manner in which it has ruptured through the chest-wall. The heart is healthy, but the aorta is much dilated and is atheromatous. The aneurysm extends from the transverse part of the arch downwards and forwards to the thorax, where it opens by a large aperture through the sternum and right costal cartilages on a level with the fifth costal interspace. The skin for some distance round the actual point of rupture is thickened and discoloured. The aneurysmal sac is large and free from clot; its walls are thickened to a considerable extent.

From a married woman aged 42, who first noticed a swelling at the right side of the sternum eleven months before her death. On raising the right arm she had aphonia. The tumour, which measured during life  $2\frac{1}{2}$  inches in diameter, had well-marked expansile pulsation. The patient suffered much from dyspnoea and cough. A cast of the case is preserved in Series lvi. No. 98a, and a drawing in Series lvii. No. 105a.

See *Elizabeth Ward Book* for 1884, No. 245.

#### ANEURYSM OF THE ARCH OF THE AORTA, TREATED FOR NINE MONTHS BY TUFNELL'S METHOD.

**1503a.** An extensive Aneurysmal Dilatation of the Aortic Arch. The aneurysm extends from a point immediately above the semilunar valves to the origin of the left subclavian artery. On the cardiac side

of the innominate artery the wall of the vessel forms a pouch, which has extended forwards so as to become adherent to the thoracic wall in the third costal interspace. As a result of the pressure upon this part of the thorax, the second rib was absorbed to such an extent that it was readily fractured. The left lung had become adherent to the dilated aorta, which was here so thinned that it had ruptured into the left pleural cavity. The inner surface of the aneurysm has numerous calcified plates upon it, but there is no trace whatever of laminated fibrin.

From a man aged 48, who was an hotel-keeper. He had been well until fourteen months before his death, and gave a history of syphilis when young. On admission to the Hospital he suffered from the various symptoms of an aortic aneurysm, which gradually progressed, until, after a violent fit of coughing, he suddenly became collapsed and shortly afterwards died. He was treated upon Tufnell's system from April 12th until December 23rd of the same year. At the autopsy five or six pounds of blood were found in the left pleura. The right lung was collapsed and adherent to the aneurysm. The cardiac valves were normal, except that the aortic valves were somewhat thickened. The clavicle was pressed slightly forwards.

See *John Ward Book* for 1885, No. 35.

- 1518a.** The Right Middle Cerebral Artery with a small aneurysm on one side of its trunk. The aneurysm has ruptured and a glass rod has been passed through the laceration. The rupture has occurred at a point in the artery which is situated immediately beyond its first bifurcation.

From a man aged 54, who was found in a stupid condition a week before his death. When brought to the Hospital he had well-marked left hemiplegia, with some rigidity of his right side. Twelve years previously he was said to have had two attacks of paralysis, and at the post-mortem examination a small cyst was found on the left side of the brain, marking the site of previous hæmorrhage.

See *John Ward Book* for 1887, and *Medical Post-Mortem Book*, vol. xiii. p. 292.

- 1538a.** The Right Common and External Iliac, with a portion of the femoral arteries and their respective veins. The common iliac artery has been tied with silk just above its bifurcation, and its proximal portion is filled with clot for half an inch above the upper ligature. The external iliac is dilated in its upper third, whilst its lower two-thirds forms a large fusiform aneurysm filled with a firm clot, a large part of which is laminated. The internal iliac is closed by clot for an inch below the ligature. The common and superficial femoral with the profunda femoris are filled with dark adherent clot. No vein appears to have been injured during the operation. The external iliac vein is normal; the common femoral vein and its tributaries are also filled with clot, the veins being compressed by the aneurysm beneath Poupart's ligament.

The patient was a discharged soldier, aged 52, who had an inguinal aneurysm. He had served in India, and had syphilis; for two years he was aware that something had been wrong with his groin, and for two or three months the right lower limb had been much swollen. He had an aneurysm reaching from below Poupart's ligament up to a point midway between the crural arch and the umbilicus; there was a strong pulsation, but no bruit; in other respects he seemed a healthy man.



The artery was tied above the aneurysm with a carbolised kangaroo tendon, and the pulsation was at once arrested; next day the pulsation had returned in full force. The artery was again exposed; the ligature was found *in situ*, with no appearance of loosening, but the point of an aneurysm-needle could be inserted between the vessel and the ligature. It was therefore removed, and two carbolised silk ligatures were placed on the artery, one above and one below the site of the first ligature; pulsation ceased at once. In forty-eight hours the pulsation returned, and continued until the day before death. The limb became gangrenous, amputation was performed, but the patient died three days afterwards, and twelve days from the date of the first operation.

See *Male Surgical Register*, vol. ii. (1885), No. 3175, and *Transactions of Clinical Society*, vol. xx. p. 29.

- 1539a.** The Right Common and External Iliac, with a portion of the Femoral Artery, showing a sacculated aneurysmal dilatation of the external iliac, with a fusiform aneurysm of the common femoral. The common iliac artery is atheromatous, and the upper inch and a half of the external iliac is healthy, but its lower part is dilated into a large aneurysmal sac, into which the upper part of the vessel opens by an oblique aperture, through which a piece of black catheter has been passed. The sac-wall, which is lined with clot, consists of the vessel-walls and of its sheath in the greater part of its extent, but at its upper part the blood is only limited by the surrounding soft tissues, and in one place the walls have entirely disappeared and the blood has escaped. In several other places the walls of the sac are so thin as to be translucent. The lower part of the sac again opens into the external iliac by a circular aperture, through which a green rod has been passed. The portion of the external iliac which passes under Poupart's ligament is fairly healthy, but the common femoral is atheromatous, and is dilated to form a fusiform aneurysm, measuring when fresh about two inches in diameter and containing a soft clot. The rest of the femoral is healthy.

From a man aged 35, who was admitted on account of an inguinal aneurysm, which had only been observed for five weeks. The patient was treated according to Tuffnell's method for three weeks, when the artery suddenly gave way; death from collapse occurring shortly afterwards.

See *Male Surgical Register*, vol. iii. (1885), No. 3326. †

- 1551c.** The Iliac, Common Femoral, and Popliteal Arteries, from a case in which the femoral had been ligatured in Scarpa's triangle twenty years before the death of the patient, for the cure of a popliteal aneurysm. The operation was performed by Mr. Stanley, late surgeon to the Hospital. The artery has unfortunately been divided close to the seat of ligature, but has been sewn together again with silk. For an inch and three-quarters from this point it has become converted into a solid fibrous cord, which is slightly smaller than the rest of the artery. Between the point of ligature and the remains of the aneurysm the artery is pervious and gives off several large vessels, but its lumen is partially occluded by a thin membranous blood-clot. The aneurysm itself is converted into a dense mass of fibrous tissue.

From a man aged 50, who died from the rupture of an aneurysm of the aorta.

See *Mark Ward Book* for 1887, No. 44.



**1571d.** The Heart and Arteries of the right upper extremity, from a case of dry gangrene following upon embolism of the subclavian and brachial vessels. The heart is greatly enlarged and is very fatty. Its mitral orifice is so dilated as to admit of the passage of four fingers through it, and the valves are rigid, calcareous, and fringed with lymph. The aortic valves are slightly atheromatous, and the aorta is somewhat larger than normal. The innominate and right subclavian vessels are patent, but at the spot where the subscapular branch is given off from the axillary artery to the origin of the circumflex vessels, the main vessel is completely occluded by an embolus. The clot is decolourised; it is very firm, and is adherent to the walls of the artery. The brachial artery appears to be normal as far as its bifurcation, but it is then occluded by an embolus, and by a firm adherent clot which extends for about half an inch into the radial and ulnar arteries. The hand had undergone dry gangrene, and was mummified for about three inches above the wrist.

From a man aged 63. Whilst rubbing some butter into his shoe with his right hand, six weeks before his death, he suddenly felt a pain in the situation of the carpo-metacarpal joint of the thumb. A small black spot appeared in this situation, and his hand soon became blue and numb.

See *Male Surgical Register*, vol. i. (1884), No. 3637.

The hand is preserved in Series I. No. 3235d.

**1571e.** The Abdominal Aorta with the arteries of the lower extremities. The aorta is extremely degenerate, and about three inches from its bifurcation it contains a firm dark clot which occupies a part of its lumen. At the time of the autopsy the whole of the aorta in this situation was filled with coagulum. From the bifurcation downwards a clot completely filled both iliacs and the vessels of both legs as low as the popliteal arteries. In the wall of the common iliac on either side, just above the origin of the internal iliac and extending into that vessel, is a calcareous plate nearly an inch long and extending half way round the circumference. At the origin of the profunda artery is some dark-coloured and firmly adherent clot, and in the popliteal artery is a small piece of pale clot, which is also firmly adherent. Below the popliteal the arteries contained only a small quantity of dark coagulum, but they were hard and distended by thrombi.

From a woman aged 56, who seven days before her death was suddenly seized whilst walking with a numbness in her left leg below the knee. On admission she had double mitral and tricuspid regurgitant murmurs. Two days after the seizure both legs became gangrenous, and she died a week after the onset of the disease. At the post-mortem examination the heart was found to weigh thirteen ounces, and the mitral and tricuspid valves were both diseased.

See *Elizabeth Ward Book* for 1885, No. 274.

**1571f.** The Left External Iliac and Femoral Arteries from a case in which gangrene of the thigh occurred as the result of the lodgment of an embolus in the common femoral artery. The embolus is lodged at the termination of the common femoral, and is apparently derived from a vegetation on the aortic valves of the heart. The superficial femoral

and profunda vessels were plugged with a dark-coloured and adherent clot for a distance of three inches below the embolus. The clot has not extended upwards probably because two muscular branches are given off from the femoral immediately above the seat of impaction.

From a man aged 63, who was the subject of aortic disease. The patient went to bed in his usual health on the seventh night before his death. On waking in the morning he felt a sudden pain as of "cramp" in his left hip. Within half an hour his leg and foot became numb, and on the second day a gangrenous patch was observed over the area of distribution of the descending branch of the external circumflex artery.

See *Male Surgical Register*, vol. i. (1885), No. 3792.

## SERIES X.

# DISEASES AND INJURIES OF THE LARYNX AND TRACHEA.

## TUBERCULAR ULCERATION OF THE TRACHEA.

1633f. The Larynx and a portion of the Trachea from a man aged 42, who died of tubercular phthisis. The whole of the mucous membrane lining the trachea is occupied by numerous circular ulcers, which extend to a considerable depth. The supraglottic portion of the larynx is free from ulceration.

See *Medical Post-Mortem Book*, vol. xiii. p. 46.

## PARTIAL EXCISION OF THE LARYNX.

1656b. The Left Half of the Larynx, together with the true and false vocal cords, removed for an epitheliomatous growth situated upon the under surface of the true vocal cord.

From a gentleman aged 50, who suffered from hoarseness of two years' duration. He had a warty growth on the left vocal cord, which appeared to be non-malignant, although it presented some suspicious characters. At different times during a period of six months, portions of the growth were removed with forceps. Recurrence took place, and the cord exhibited impaired mobility. Hahn's tracheotomy tube was used during the operation, and was left in for two days. At the end of two days it was replaced by a smaller tube. During the first few days after the operation the patient was fed through an œsophagus tube by means of a syringe. The temperature never rose above 100°, and the pulse was, almost from the first, from 80 to 84. On the fifth day the patient began to swallow. On the seventh day the tracheotomy tube was permanently removed. Three weeks after the operation he drove to Wimbledon, and after a week at Wimbledon, returned to his home in the country. The chief, and indeed the only trouble from which he suffered, was cough, which commenced as soon as the large tube was replaced by a smaller tube, but which gradually became less distressing, and finally ceased within a few days after the permanent removal of the tube. He was last seen by Mr. Butlin on September 28th, when the wound was healed with the exception of a little sinus at the lower part. There was no sign of recurrent disease, or of affection of the glands of the neck. His general health was excellent, and he was able to speak in a gruff whisper.

Presented by H. T. Butlin, Esq.

- 1663b. Portion of the Tongue and Larynx, showing a self-inflicted jagged wound which has completely destroyed the crico-thyroid membrane and the anterior portion of the cricoid cartilage. The thyroid cartilage has numerous gashes in it, which in some cases extend as far as the right lobe of the thyroid gland. The trachea has been divided through its second and third rings.

From a man aged 29.

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## SERIES XI.

### DISEASES AND INJURIES OF THE PLEURA, BRONCHIAL TUBES, AND LUNGS.

- 1671a. A portion of the Thoracic Wall, with the seventh, eighth, and ninth ribs and left lung, to show the changes which have taken place as the result of a chronic empyema. The lung is much contracted, and is bound down to the pleura by such dense fibrous adhesions, that it cannot be separated without laceration of its substance. The parietal layer of the pleura is converted into a calcified plate measuring three-sixteenths of an inch in thickness. The empyema perhaps resulted from an injury to the seventh rib, which is fractured about its middle.

From a subject brought to the Hospital for dissection.

- 1704b. Section of a Lung from a case of diffuse symmetrical pulmonary cirrhosis. The lung tissue is traversed throughout by numerous intersecting greyish fibroid strands, which appear in places to follow the lines of the interlobular septa.

From a woman aged 37, who had always been healthy until twelve months before her death. She first suffered from retching, vomiting, and cough with thick yellow expectoration. At a later period she spat up a little blood. On admission she had scattered crackling râles over the right apex and over the whole side behind. The breath sounds were harsh and almost tubular at the apex, with bronchophony. <sup>51</sup>

A section of the lung is preserved in Series IV. No. 69d.

See *Transactions of the Pathological Society*, vol. xxxvii. p. 126.

Presented by Percy Kidd, Esq., M.D.

### EXPERIMENTAL TUBERCULOSIS

- 1713a. The Thoracic and Abdominal Viscera of a guinea-pig, which died ninety-two days after inoculation with tubercular material obtained from a human subject. The lungs, liver, spleen, and kidneys are filled with miliary tubercle.

Prepared and presented by Prof. J. T. Cash, Esq., M.D., F.R.S.

- 1718a. The Right Lung of a patient who died of tubercular phthisis. The apex of the lung is characteristically puckered. The puckering corresponds to deeply-seated encapsulated cavities lying in spongy lung tissue.

Numerous nodules are scattered through the rest of the lungs. The left lung of the same patient was extensively excavated and generally diseased.

From a man aged 23, a candlemaker by trade, who had chronic phthisis of more than four years' duration.

- 1718b.** The Left Lung of a patient who had tubercular phthisis. In the upper lobe are large cavities with trabeculæ running across them. In the lower lobes are numerous small suppurating cavities, some filled with caseating material, whilst others are of acute origin. In a small cavity at the base is a single unruptured miliary aneurysm.

From a man aged 27, a metal-turner by trade. The phthisis was of two years' duration; it commenced with hæmoptysis, and he suffered much from diarrhœa. A portion of the intestine showing the tubercular ulceration is preserved in Series xviii. No. 2016a.

- 1718c.** The Right Lung from a patient who had tubercular phthisis. In the upper lobe is a large excavation, across which run numerous trabeculæ. The rest of the lobe is filled with caseous nodules. In the lower lobes are softening caseous masses with acute suppurating cavities.

From a man aged 19, a porter. The phthisis had probably existed for about a year. It commenced with an attack of bronchitis. The urgent symptoms lasted six months.

- 1718d.** The Left Lung of a patient who had tubercular phthisis. As in the previous specimen, there is a large trabeculated excavation at the apex. In the lower and anterior part of the upper lobe the indurated lung tissue is hollowed out into small cavities. In one of the cavities is an unruptured aneurysm, of no great size, which is filled with a thrombus.

From a man aged 32, a buttermilk, who had chronic phthisis for two years.

The four preceding specimens were presented by Percy Kidd, Esq., M.D.

## SERIES XII.

### DISEASES AND INJURIES OF THE NOSE, MOUTH, TONGUE, PALATE, AND FAUCES.

- 1768b.** A Myxomatous Nasopharyngeal Polypus, measuring about 3 inches in length, and with a base which is nearly an inch in breadth. The part which occupied the right nasal passage is firmer and whiter, and is somewhat constricted off from the remainder of the polypus.

The growth was removed by avulsion from a woman aged 33, in whom it had been growing for three years.

See *Female Surgical Register*, vol. v. (1886), No. 2743.\*



- 1772a.** Section of a Skull with the Brain *in situ*. The antrum is occupied by a large and tolerably firm growth, which has extended upwards into the orbit, and inwards so as to fill the nostril on the right side. The growth extends along the inferior meatus from the anterior nares, where it is ulcerating, nearly as far as the choanæ. Microscopically the growth is a spheroidal-celled carcinoma.

The specimen was obtained from the body of a woman aged 64, who died from epistaxis. The tumour had only been observed for two months before her death. The patient had well-marked diplopia.

Presented by J. A. Gray, Esq.

- 1777a.** An Ulcerating Epithelioma growing upon the lower lip of a man aged 59. The ulcer presents an oval outline, measuring an inch across by an inch and a quarter in its long diameter. It is situated upon the mucous membrane of the inner side of the lip.

See *Male Surgical Register*, vol. iv. (1887), No. 144.

#### **TUBERCULAR ULCERATION OF THE SOFT PALATE.**

- 1781a.** The Larynx and Trachea, with a portion of the soft palate, from a man aged 56, who died with tubercular phthisis. The epiglottis and larynx are deeply ulcerated over the greater portion of their surface. The edges of the epiglottis are eroded by the ulceration, and there is some considerable thickening of the aryteno-epiglottidean folds. The soft palate has also undergone a process of diffuse ulceration.

See *Medical Post-Mortem Book*, vol. xii. p. 179.

#### **SARCOMA OF THE TONGUE.**

- 1786a.** A Portion of a Tongue which was removed on account of a sarcomatous growth. The section exhibits a soft white tumour, oval in shape, of about the size of a fives-ball, and measuring one and a half inches in length by an inch in breadth. It is situated immediately beneath the mucous membrane of the middle third of the left side of the tongue. It is circumscribed, and at one part exhibits traces of a capsule. Microscopically it consists of sarcoma cells, which are large, round, and granular. The matrix is homogeneous, but in parts granular. Numerous small blood-vessels run amongst the cells.

From a man aged 40, who first noticed a soreness about the middle of the left side of his tongue three months before admission to the Hospital, though it was not until two months later that he observed any swelling. The tumour rapidly increased in size, but was only painful during mastication. One half of the tongue was removed, and the patient made a good recovery.

See *Male Surgical Register*, vol. ii. (1886), No. 3062; *The Lancet*, vol. i. 1887, p. 623.

- 1788f.** The Left Half of a Tongue removed on account of an epitheliomatous infiltration. The new growth has broken down to form a large and irregularly oval ulcer, which occupies the posterior two-thirds of the

lateral margin of the organ. It measures an inch in length by half an inch across.

From a man aged 50, who had noticed for four or five months that his tongue was sore. He was in the habit of smoking a clay pipe on the left side of his mouth. The glands were not enlarged.

See *Male Surgical Register*, vol. iii. (1885), No. 3345.

**1788g.** The Right Half of a Tongue which was removed on account of an epitheliomatous growth. The growth is a large warty mass, situated upon the anterior portion of the tongue.

From a man aged 60, a postmaster, who attributed the tumour to the constant licking of postage labels. Seven years before admission the tongue was sore and red, but it was not until six months before the removal of the organ that any growth was observed.

See *Male Surgical Register*, vol. ii. (1886), No. 2651.

**1800a.** A Tumour removed from the palate of a gentleman aged 60. It had been noticed two years previously, but had probably grown more quickly during the latter part of this period. It occupied the right side of the palate, extending a little across the middle line. It was elastic, almost fluctuating. It had a well-marked capsule, from which it was easily shelled out, as it had no firm connection with the bone. The wound healed quickly and without any exfoliation of bone. Microscopically the growth is a fibrous sarcoma.

Presented by Stephen Paget, Esq.

**1800b.** A Section of a Tumour removed from the palate of a woman aged 20. The tumour had been growing for a period of four years. Microscopically it resembles a glandular formation in which the gland tissue is in most parts very imperfectly formed. The cells are evidently epithelial, and are usually arranged in irregular masses, separated from one another by a homogeneous stroma, which appears to be formed by a degeneration of the cells themselves. A few definite gland tubes may be met with, and in one part there are some cell-nests. The epithelial cells are generally small and round, but in the neighbourhood of the nests they become solid.

A section is preserved in Series lv. No. 73c.

See *Female Surgical Register*, vol. ii. (1886), No. 2132.

**1800c.** A Tumour removed from the palate. It is seen in section to be of firm consistence, with numerous minute cavities in it. It measures two inches in length by an inch and a half in breadth. Microscopically the stroma is composed of fibrous tissue and hyaline material. It contains small irregular masses of epithelial cells, amongst which are a few cell-nests. At one margin of the tumour the cells are larger and more numerous, whilst in places they are collected into masses which are enclosed in definite alveoli. Within a month of the removal of the tumour from the palate, where it had been growing for twenty years, it was found necessary to remove the superior maxilla. The

growth infiltrating the bone was composed of a fibrous stroma enclosing very definite alveoli filled with large epithelial cells. The growth was evidently carcinomatous.

From a man aged 55. The tumour of his palate had existed for twenty years. It was pear-shaped, and was attached to the left side of the arch of the palate, the soft palate being free. He had noticed a swelling of the left cheek and an overflow of tears for two months.

A section of the tumour is preserved in Series lv. No. 74j ; a section of the growth in the superior maxilla in Series lv. No. 73k.

See *Male Surgical Register*, vol. iii. (1887), No. 622.

## SERIES XV.

### DISEASES AND INJURIES OF THE PHARYNX AND ŒSOPHAGUS.

#### BLOOD-CASTS FROM THE ŒSOPHAGUS.

**1835a.** Three Fibrinous Casts, which appear to have been formed in the œsophagus. They measure from three to twelve inches in length, and are nearly an inch in breadth at their thickest part. They are composed of fibrin with blood corpuscles in their meshes.

From a patient aged 22, who had repeated attacks of uncontrollable epistaxis. The nares were plugged, and the casts were subsequently vomited. He died of septic pneumonia.

See *Male Surgical Register*, vol. v. (1886), No. 1818.

## SERIES XVI.

### DISEASES OF THE PERITONEUM, OMENTUM, AND MESENTERY.

**1890a.** A Section of the Bladder and Rectum from a case of cancer of the peritoneum. The whole of the recto-vesical pouch is occupied by a mass of colloid cancer, which has resulted from the degeneration of a medullary carcinoma. So far as can be ascertained, the carcinomatous growth sprang from the bottom of the recto-vesical pouch. At one spot it has opened by a process of infiltration into the posterior wall of the bladder. Neither the rectum nor the folds of intestine above appear to be implicated in the growth.

From a gentleman aged 62, who for more than twenty years before his death had a slight mucous discharge from the bowel. On July 14th he passed a tablespoonful of pus by the rectum ; on the 15th he had extreme frequency of micturition ; on the 18th air passed per urethram, and a little later in the day some fæces. The patient died of exhaustion on December 16th. At the autopsy a cancer of the intestine was found to have perforated the bladder, the size of the perforation being that of a shilling. There were neither secondary deposits nor enlarged glands in the immediate neighbourhood, nor were there any abscesses. There was a little suppurative pyelitis on both sides, and a few minute abscesses in the renal substance.

Presented by Samuel West, Esq., M.D.

SERIES XVII.

DISEASES AND INJURIES OF THE STOMACH.

1922a. A Carcinomatous Infiltration of the Body of the Stomach. The viscus is greatly contracted, its walls being so much thickened that they measure in parts a quarter to half an inch in thickness. When it was laid open it measured eight inches from the œsophagus to the pylorus round the greater curvature, and four and a half inches at its widest part. The walls are so rigid that the organ maintains its shape when it is placed upright. The tissue near the œsophagus appears to be less infiltrated than the rest, and the disease ceases abruptly at the pyloric orifice. The mucous membrane in the pyloric portion has undergone some superficial ulceration, but there is no definite ulcer in any part of the organ. Microscopic examination shows that the growth consists of a dense connective tissue stroma, containing a few very large epithelial cells.

From a man aged 55, who had suffered from abdominal pain for sixteen months, and from jaundice for six months previous to his death.

See *Luke Ward Book* for 1885, p. 2055, and *Medical Post-Mortem Book*, vol. xii. p. 124.

SERIES XVIII.

DISEASES AND INJURIES OF THE INTESTINES.

[SIMPLE ULCERATION OF THE INTESTINE.

1963a. A Portion of the Descending Colon, which is greatly thinned as a result of over-distension. The mucous membrane contains numerous small irregular ulcers, which extend so deeply as almost to perforate the intestinal wall. The ulceration is of the simple variety, and appears to be due to the mechanical distension and irritation to which its walls have been subjected. At the upper portion of the preparation the peritoneum has given way, and the extreme tenuity of the muscular coat is well seen. At one spot the wall has been accidentally ruptured in removing the preparation from the body.

From a man aged 47, who died from the effects of cancer of the rectum. The cancerous symptoms had only existed for six months.

See *Male Surgical Register*, vol. i. (1887), No. 937.

2016a. A Portion of the Ileum from a patient who died with tubercular phthisis. The mucous membrane is diffusely ulcerated. The individual ulcers are confluent, and so the ulceration is sinuous in character. There is no appreciable thickening of the coats of the intestine.

From a metal-turner aged 27, who suffered for two years from phthisis. He had hæmoptysis and diarrhœa.

The left lung of this patient is preserved in Series xi. No. 1718b.



- 2016b. The Cæcum, with a portion of the Ileum and a small part of the Colon, from a patient who died with tubercular phthisis. The mucous membrane of the ileum and large intestine is much ulcerated, and is puckered by the contraction of old cicatrices. The cæcum is much thickened and ulcerated, the ulcers being here confluent and of the sinuous type.

From a woman who had suffered for three years from chronic phthisis, with much diarrhœa.

The two preceding specimens were presented by Percy Kidd, Esq., M.D.

- 2040b. A Portion of the Descending Colon, showing a large rent in its side. The rupture resulted from tension upon the bowel consequent upon strangulation, occurring immediately below an artificial anus which had been made four years previously. The strangulation resulted from a large loop of ileum being forced through the abdominal walls.

From a man aged 75, upon whom colotomy had been performed for the relief of intestinal obstruction. A few days before his death he took cold, and whilst coughing he felt something give way, and found that a large swelling had appeared just below the artificial anus. A great deal of blood oozed from the swelling, and he suffered greatly from pain. He died two days after the appearance of the tumour.

For further details of the case see *The British Medical Journal*, vol. i. 1885, p. 1039.

Presented by Thomas Simpson, Esq.

- 2043a. The Duodenum from a case of poisoning by corrosive sublimate. The intestinal wall is blackened, and at its upper part is completely ulcerated through. From the rounded appearances of the edges of the ulcer, however, it appears that it was not due to corrosion, but to some more chronic process, which resulted in the adhesion of the duodenum to the neighbouring tissues, thereby preventing perforation.

From a man aged 76, who committed suicide by swallowing a large quantity of corrosive sublimate in a glass of water. He died collapsed five hours after the dose.

The stomach is preserved in Series xvii. No. 1949a, and a drawing of it in Series lvii. No. 221a.

See *The British Medical Journal*, vol. ii. 1885, p. 599.

Presented by C. Rotherham Walker, Esq., M.D.

## SERIES XIX.

### DISEASES OF THE RECTUM AND ANUS.

- 2048a. The Rectum, with the Uterus and a portion of the Vagina, from a patient who had a fibrous stricture of the rectum. The stricture is tubular, and commences three inches above the anus, extending upwards to a height of six or seven inches. It is so tight that the glass rod which is passed through the upper portion almost fills the lumen of the gut. The stricture seems to be produced by a thickening and contraction of the muscular coat. The muscular element appears to have

disappeared, leaving only a greatly hypertrophied fibrous network. The upper part of the stricture ends abruptly, but the mucous membrane is superficially ulcerated for a distance of from one to two inches higher, the muscular coat corresponding to this portion being somewhat hypertrophied, but not contracted. At the bottom of Douglas' pouch is a well-marked cicatrix, apparently indicating the site of an old abscess cavity in the fascia between the peritoneum and the rectum. The rectum opposite this point has been dragged upon, and drawn towards the cicatrix.

From a woman aged 32, who was quite well till she was prematurely delivered of a still-born child six years before her death. This premature labour was followed by intense pain in the lower part of the belly, and she had other symptoms of pelvic cellulitis. A month later she had a discharge of blood and pus from the rectum, which continued for some weeks. Soon afterwards she noticed a slight difficulty in passing her motions, and she also had some discharge from her bowel. The trouble gradually increased, until a year before her death, after which it rapidly got worse.]

See *Female Surgical Register*, vol. iv. (1885), No. 2311, and *Transactions of the Pathological Society*, vol. xxxvii. p. 255.

**2057b.** The Rectum and Sigmoid Flexure of a patient upon whom the operation of colotomy was performed three days before death for the relief of a syphilitic stricture of the rectum. The bowel from the anus upwards is much thickened, and its cut edge almost resembles cartilage. The thickening gradually diminishes until it is imperceptible at the splenic flexure. There is hardly any epithelium covering the diseased portion of the intestine. A microscopic examination of a portion of the intestinal wall, taken about fourteen inches above the anus, shows that the epithelial lining is entirely absent. The submucous tissue is so infiltrated with round cells as to look like a section of lymphatic gland. The muscular coat is also invaded by lymph corpuscles and a dense fibrous meshwork, whilst the outer peritoneal coat is infiltrated with cells.

From a woman aged 35, who had acquired syphilis about twelve years before her admission to the Hospital. All round the margins of the anus and vagina, and extending for some distance up both, there was a mass of cicatricial tissue to be felt during life. The patient had suffered for several years from diarrhoea, and for some months before her death had been unable to retain her fæces. Left lumbar colotomy was performed three days before death. At the autopsy no other signs of syphilis were discovered. A microscopic section is preserved in Series lv. No. 87i.

See *Transactions of the Pathological Society*, vol. xxxvii. p. 258, and *Female Surgical Register*, vol. v. (1885), No. 1644½

**2066a.** The Lower Portion of the Rectum, removed during life from a single lady, aged 51, on account of the growth of an adenoid cancer. The growth, as is seen in the specimen, completely surrounded the bowel, its centre, which was ulcerated, being situated about two and a half inches from the anus; it has, however, been entirely removed, for the preparation is suspended by the healthy mucous membrane. The peritoneum was clearly seen during the operation, but it did not

appear to be affected. The intestinal walls are not greatly thickened, nor is the lumen contracted.

The patient had suffered from troublesome diarrhoea for the last eight months, especially in the forenoon, her motions often being as many as a dozen in the twenty-four hours.

Presented by W. Harrison Cripps, Esq.

- 2076a.** The Lower Portion of the Rectum and the Anus, from a man aged 38. The mucous membrane in the neighbourhood of the anus is festooned with hæmorrhoids. The piles are for the most part of the external variety, since they are partially covered by skin and partially by mucous membrane. The central round mass is, however, entirely covered by mucous membrane, and is therefore an internal pile.

See *Male Surgical Register*, vol. iii. (1886), No. 1810.

## SERIES XX.

### HERNIÆ OR PROTRUSIONS, AND OTHER DIS- PLACEMENTS OF THE INTESTINAL CANAL AND OMENTUM.

- 2140e.** The Sac of a Hernia, probably funicular. On its posterior wall is a deep pouch. The fold of serous membrane which forms the inner boundary of the sac contains the spermatic artery and vein, whilst running round the lower end of the sac and up its outer side is a fibrous band. This band is apparently a blood-vessel, and may originally have been a recurrent branch of the spermatic artery, such as is seen in the Anatomical and Physiological Catalogue, Series xx. No. 870a.

#### A CONGENITAL UMBILICAL HERNIA.

- 2156a.** The Sac of a Congenital Umbilical Hernia. The tumour appears to be formed by a dilatation of the coverings of that portion of the umbilical cord which was nearest to the body of the child. It is fusiform in shape, and has the main constituents of the funis running as a bundle along its lower border. The wall of the sac consists of a thin and soft membrane, which was so transparent whilst the specimen was fresh, that the coils of intestine could readily be seen within it. The external surface was polished, and closely resembled the outer surface of the cord; whilst internally the sac is covered with a smooth layer which is apparently derived from the peritoneum. At the apex of the tumour the funis reappears, and has upon its under surface a cyst containing a viscid fluid. A bristle has been passed for a short distance into the umbilical vein, and a green rod has been passed between the sac wall and its peritoneal lining.

From a newly-born child at full time. The labour was quite natural, but a placenta-like mass was attached to the child's abdomen. On closer examination with the

aid of a candle, this mass was found to be a transparent sac containing several coils of small intestine, measuring in all about a foot in length. The sac was situated in the funis at the part nearest to the child's abdomen. The cord was ligatured and divided in the ordinary manner, and an ineffectual attempt was made to get back the bowel through the umbilical aperture. The sac was then carefully opened on a director, and after division of the umbilical ring the intestine was returned into the abdominal cavity. The child survived for three days, dying of peritonitis.

A drawing of the specimen, enlarged from a sketch made before the operation, is preserved in Series lvii. No. 260j.

See also *Transactions of the Pathological Society*, vol. xxxix.

Presented by J. J. de Z. Marshall, Esq.

**2159a.** A Portion of the Abdominal Wall in the neighbourhood of the linea alba. A small tumour consisting of fat and subperitoneal tissue has made its way through the linea alba. During life the tumour could be felt as a lobulated mass situated beneath the skin; it was freely moveable and partly reducible.

**2163b.** A Portion of the Left Half of the Diaphragm, from a case of diaphragmatic hernia. There is a large oval aperture with rounded edges; through this aperture the stomach and a large portion of the transverse colon passed during life. At the autopsy the lung was completely hidden by the distended stomach. The heart was much dilated and lay upon the right lung, whilst the left lung was collapsed, and occupied the apex of the thorax; it was only half the weight of the right lung, and had a depression upon its anterior surface corresponding with the position of the stomach. The intestines, on account of the numerous adhesions which they had contracted, were only removed with difficulty.

From a man who was admitted to the County Asylum, Stafford, suffering from acute melancholia. He died of chronic bronchitis and emphysema. Fifteen years before his death, whilst working in a pit, a heavy piece of coal fell upon him, and he was brought to the surface insensible. He was confined to his bed for some months, and was subsequently treated for choleraic diarrhoea, and later for bronchitis.

Presented by A. Everley Taylor, Esq.

**2164a.** A Portion of the Ileum in the neighbourhood of the ileo-cæcal valve, which has become strangulated by the formation of a band of adhesion, the result of peritonitis eight months before death. The patient had complete obstruction for a week; abdominal section was performed, but he died unrelieved forty-eight hours after the operation.

Presented by A. Maude, Esq.

## HERNIA INTO THE FOSSA INTERSIGMOIDEA.

**2176a.** A Portion of the Ileum, with the Cæcum and Colon, from a case of strangulated hernia in which about six inches of the lower end of the ileum had passed through an opening (the foramen intersigmoideum) in the sheet of peritoneum which extends from the posterior surface of the sigmoid flexure to the left iliac fossa. The opening in the peritoneum is oval, its long diameter measuring about half an inch. It is



situated close to the left side of the sigmoid flexure, its lower margin being about an inch above and to the outer side of the sacro-iliac synchondrosis, and the same distance from the ovary. The opening leads into a sac of peritoneum having very thin walls, which were attached to, or continuous with, the margins of the opening. The sac is pyriform, measuring three inches in its long diameter, and it extends upwards and backwards beneath the large intestine. Its posterior surface is in contact with the iliacus and lumbar muscles, and was only loosely connected with them, but its anterior surface is adherent to the peritoneum and posterior surface of the large bowel. The sigmoid flexure is nearly surrounded by peritoneum, but it has not a distinct mesentery, since the two layers of peritoneum reflected from it are nowhere in contact. Above the opening of the hernia the sigmoid flexure is bound down to the iliac fossa by three bands of thickened peritoneum. This portion of the intestine is displaced towards the middle line. The distended cæcum occupies a position immediately to the right of the middle line. (The ascending colon took a course obliquely across the abdomen to the left hypochondrium, where it turned sharply to the right and followed the course of the diaphragm until it reached the middle line; it then bent upon itself and returned above and parallel to its former course as far as the lower edge of the spleen; thence it took the usual direction to the sigmoid flexure). Both the ascending and descending portions of the large intestine are closely united and almost surrounded by a single layer of peritoneum. There is no transverse colon. Immediately above the cæcum the ascending colon and the adjacent curve of the sigmoid flexure are bound together by a ribbon-like band of fibrous tissue three-quarters of an inch in breadth and half an inch in length; the adhesion to the sigmoid flexure is two inches below the level of the hernial opening. The ascending colon is slightly narrowed by the tension to which the band gives rise, but the calibre of the lower bowel is unaltered.

From a woman aged 63, who was suddenly attacked with symptoms of acute intestinal obstruction. On the following day she passed a small motion with a little slime and blood. Two days later she had faecal vomiting. Eight days after the onset of the symptoms right lumbar colotomy was performed, and she died three days afterwards.

See *The British Medical Journal*, vol. i. (1885), p. 1195.

A drawing is preserved in Series lvii. No. 260b.

## SERIES XXI.

### DISEASES AND INJURIES OF THE LIVER.

**2194c.** Section of a Liver which has undergone lardaceous or amyloid degeneration. The degenerate tissue is darkly stained with iodine.

#### GUMMATA OF THE LIVER.

**2202b.** The Liver from a boy aged 9. Its surface is extremely irregular, and in several places it is puckered into deep scars. On

section several large yellowish and tough masses of irregular outline were found, each being surrounded by a red zone of engorged liver substance. One of these masses is seen in section at the bottom of the bottle. Microscopic examination showed the masses to be large gummata, and in their vicinity here and there on the surface were minute collections of embryonic connective tissue cells.

From a boy who, with some intervals, had been in Luke Ward from December 1883 to September 1885. His most prominent symptoms were emaciation, ascites, and enlarged liver. He had a very sallow skin and well-marked Hutchinsonian teeth. The liver, kidneys, stomach, intestines, and spleen all showed advanced amyloid change.

See *Transactions of the Pathological Society*, vol. xxxviii. p. 271.

## SERIES XXV.

### DISEASES AND INJURIES OF THE SPLEEN.

#### AMYLOID DEGENERATION. †

- 2298a. A Section of a Spleen which has undergone lardaceous or amyloid degeneration. The degenerate portion is darkly stained with iodine.

## SERIES XXVI.

### DISEASES OF THE THYMUS AND THYROID GLANDS.

- 2310a. A Cysto-Adenoma of the right lobe of the thyroid gland. The new growth lies immediately in front of the trachea, which it compresses from before backwards.

- 2310b. A Cysto-Adenoma of the right lobe of the thyroid gland.

A photograph is preserved in Series lvii. No. 298t.

- 2314c. The Trachea and Thyroid Gland from a case of goitre. This specimen shows an hypertrophied condition of the whole gland, including a pyramid of Lalouette. The gland completely covers the anterior surface of the larynx, and extends upwards as far as the hyoid bone. The trachea is nearly surrounded by the growth, which has compressed it from side to side; the lateral lobes almost meet behind. A section through the left lobe shows a great increase in the connective tissue of the gland, as well as numerous small cysts. During life the tumour extended as low as the posterior surface of the manubrium sterni.

- 2314d. The Trachea and Thyroid Gland from a case of goitre. The right lobe of the thyroid is the seat of cystic disease. The sterno-

thyroid muscle has been displaced outwards and forwards, and is spread out over the surface of the tumour in the usual manner. A long, narrow pyramid of gland tissue, extending upwards to the hyoid bone, is connected with the left lobe of the gland.

**2314e.** Cystic Disease involving the whole of the thyroid gland. The right lobe has been laid open, showing numerous cysts in its interior. Some of the cysts are filled with the usual colloid material, others are more or less calcified. On the left side the outward displacement of the carotid vessels may be noticed. The relations which the recurrent nerves usually bear to a goitre are also well seen. They lie in the grooves between the thyroid and the œsophagus.

**2314f.** Portions of Cyst-Wall and partially calcified colloid contents of a large Cystic Goitre removed by operation.

The cyst was globular, measuring about 5 inches in diameter; the cyst-wall was thick and tough; the interior was completely filled with the solid material shown in this specimen. It consists of the ordinary mucoid contents of a thyroid cyst solidified together with the remains of blood-clot. Much calcification has occurred in it.

Removed by Dr. Comte at Geneva, July 30, 1886.

Photographs of the patient before and after operation are preserved in Series lvii. No. 298qq.

**2314g.** Part of a Goitre, Trachea, and Œsophagus, cut horizontally, to show the relations which they bear to each other. The left lobe of the gland is larger than the right; it has caused slight flattening of the left side of the trachea. The position of the inferior thyroid vessels and the recurrent laryngeal nerves may also be seen. The internal structure of an ordinary cystic goitre is well illustrated by the specimen.

This and the five preceding specimens were presented by James Berry, Esq.

**2318a.** A Malignant Growth attacking a Bronchocele of many years' duration.

From a middle-aged man who lived at Barnsley in Yorkshire.

## SERIES XXVII.

### DISEASES OF THE SUPRA-RENAL CAPSULES.

**2321a.** The Kidneys and Supra-Renal Capsules from a case of Addison's disease. The substance of both supra-renal capsules is completely destroyed by tubercular disease. Microscopical examination showed the presence of typical miliary tubercle, but no bacilli were discovered. The kidneys appear to be healthy.

From a boy aged 14, who had been ill for twelve months preceding his death. He had well-marked bronzing of his skin, but there was no evidence of tubercular disease during life.

Presented by T. R. Atkinson, Esq.

SERIES XXVIII.

DISEASES AND INJURIES OF THE KIDNEYS,  
THEIR PELVES, AND THE URETERS.

**2331b.** Section of a Kidney which has undergone lardaceous or amyloid degeneration. The degenerate tissue is darkly stained with iodine.

**2335b.** The Left Kidney from a case of chronic interstitial nephritis. The organ is small and contracted, and its cortex is considerably diminished. The pelvis and calyces are not dilated. On its outer surface are two cysts, one of which, in the fresh state, was as big as a small hen's egg.

From a man aged 78, who was admitted to the Hospital on account of retention of urine resulting from an enlarged prostate.

The bladder, showing an enlarged and tunnelled prostate, is preserved in Series xxxix. No. 2842a.

See *Male Surgical Register*, vol. i. (1886), Nos. 353 and 726.

**2341b.** The Left Kidney from a case of tuberculosis of the genito-urinary tract. The organ is slightly enlarged, and is occupied by numerous abscesses, of which the largest is situated at the upper part of the kidney. In the recent state these abscesses were filled with inspissated pus. The ureter is enlarged and thickened, its mucous surface being much ulcerated.

From a man aged 48, who suffered for two years before his death from symptoms of tubercular disease of the genito-urinary tract. After eighteen months he presented symptoms of general tuberculosis. At the autopsy the lungs were found to be a mass of tubercle.

The bladder, prostate, and testes are preserved in Series xxix. 2412d.

Presented by A. A. Bowlby, Esq.

**2345a.** The Bladder and Kidneys from a patient who had numerous renal calculi. The kidneys are much enlarged, especially the right; both organs contain numerous calculi in their calyces. In the pelvis of each kidney, and extending downwards into the upper part of each ureter, is a branched calculus. The kidneys are little more than membranous sacs, owing to the distension which they have undergone. They contained a considerable quantity of glutinous pus. The bladder is normal.

From a woman aged 25, from whose bladder in early childhood a calculus had been removed. She had increasing symptoms of renal calculus, and died a few hours after admission to the Hospital.

See *Female Surgical Register*, vol. ii. (1885), No. 2204.

**2361a.** The Kidneys, Ureters, and Bladder. The kidneys are enlarged and sacculated, and their pelves are dilated. The right ureter immediately beyond the pelvis of the kidney presents a very tight and tortuous stricture about an inch in length. The stricture is so tight that it



was barely possible to inject water through it. Two inches lower down this ureter is again constricted, but the second stricture is not so narrow, and is annular in form. The left ureter is also constricted in two places about two inches apart. The upper stricture is situated two inches from the kidney, and the ureter above it is dilated into a pouch. The strictures will admit of the passage of a No. 7 catheter. All the strictures are tough and fibrous, and appear to be of long standing. The bladder is very much hypertrophied.

From a man aged 44, upon whom urethrotomy was performed for the relief of an impassible stricture of the urethra.

See *Male Surgical Register*, vol. iii. (1884), No. 2774.

- 2369a.** A Portion of the Bladder with the Right Kidney and Ureter. The kidney is little more than a membranous sac, owing to the entire absorption of its glandular substance. The pelvis is greatly dilated, and opens by two apertures into a distended double ureter. The ureters run separately in the first half of their course, and then fuse into a single dilated tube. The muscular wall of the bladder is somewhat hypertrophied.

From a man aged 47, who was admitted with extravasation of urine resulting from a stricture of the urethra, which had existed for several years.

See *Male Surgical Register*, vol. ii. (1886), No. 2067.

- 2372f.** A Kidney which was removed by the operation of Nephrectomy. The organ is not enlarged, nor is its capsule adherent, but its surface is rough and tuberculated. On section it is seen that the boundary layer of the medulla has been absorbed as the result of the irritation of a calculus. This absorption has occurred in several places; one at the upper border of the kidney contains a tri-radiate calculus, whilst the other cavities are situated along the outer border of the gland. A chemical examination of the calculus made by Dr. Lapraik showed it to consist of a mixture of phosphate and oxalate of lime in about equal proportions.

See *Male Surgical Register*, vol. i. (1886), No. 208.

- 2390b.** A Section of a large and soft Cancerous Mass involving the Right Kidney. The organ retains somewhat of its outline, but it is greatly enlarged. When fresh it measured nine inches in length, four inches in width, and three inches in thickness. In places the surface is nodular. The tumour is almost pulpy in consistency; it is contained within the capsule of the kidney, and involves about a third of the lower portion of the organ. The ureter opens into a sort of cavity formed by the breaking down of the tumour. Microscopically the growth is a carcinoma, the constituent cells exactly resembling those in the renal tubes. The matrix is alveolar.

From a patient aged 49, who had suffered for a year from hæmaturia with a gnawing pain in her right lumbar and inguinal regions. An exploratory operation was performed, but it was deemed inadvisable to remove the tumour. The patient died a fortnight later.

See *Female Surgical Register*, vol. v. (1885), No. 2263.

SERIES XXIX.

DISEASES AND INJURIES OF THE URINARY  
BLADDER.

**2412d.** The Bladder and Testes from a case of tuberculosis of the genito-urinary tract. The mucous membrane of the bladder is ulcerated, whilst the prostate is converted into a large abscess. The vesiculæ seminales are greatly enlarged, and the vas deferens is thickened and cord-like. The epididymis of each testicle is also enlarged and is converted into a caseating mass, and the body of either testis presents numerous patches of tubercle.

From a man aged 48, who suffered for two years before his death from tubercular disease of his genito-urinary tract. After eighteen months he presented symptoms of general tuberculosis. At the autopsy the lungs were found to be a mass of tubercle.

The left kidney with its ureter is preserved in Series xxviii. No. 2341b.

Presented by A. A. Bowlby, Esq.

SARCOMA OF THE BLADDER.

**2419a.** A Bladder containing a large Sarcomatous Tumour. The organ has been laid open along its anterior wall, and its cavity is seen to be obliterated, except at its upper part, by a large new growth, which has infiltrated its anterior and lateral walls as well as the fundus. The portion of the growth which occupies the cavity of the bladder is a cauliflower-like and tuberos mass. By the extension of the growth posteriorly the rectum has become involved, and close to the anus the growth actually projects into the cavity of the bowel. The projecting portion, however, has broken down, and in this way a fistulous passage has been established between the bladder and rectum; along it a rod has been passed. At the upper part of the specimen a portion of a catheter has been passed through a supra-pubic puncture which was made a fortnight before the death of the patient.

From a man aged 54, who first suffered from hæmaturia eighteen months before his death. The sarcoma was partially removed by median lithotomy and dilatation of the prostate; but as the tumour continued to grow and micturition was difficult and painful, the bladder was punctured above the pubes.

See *Male Surgical Register*, vol. v. (1884), No. 2785, and vol. v. (1885), No. 3678\*.

**2420a.** A Bladder affected with Epithelioma. The mucous membrane is everywhere thickened and ulcerated. There are deposits of phosphates about the trigone. The wound made during the operation of cystotomy is seen in front of the orifice of the urethra.

From a man aged 62. Perineal section was performed upon the patient seven days before his death.

See *Male Surgical Register*, vol. iii. (1885), No. 1204.

**2440a.** A Bladder exhibiting an Intraperitoneal Rupture, situated at its upper and back part. The rupture is longitudinal in direction, and

extends through the whole thickness of the viscus; a blue glass rod has been placed in it. The organ is greatly contracted.

From a boy aged 12, who was run over by a van. On admission he was found to have a fractured pelvis, he was collapsed, and was passing blood by his rectum and urethra. The patient gradually developed signs of peritonitis, and died four days after the injury. At the autopsy no urine was found in the peritoneum, although it must have escaped freely from the bladder.

See *Male Surgical Register*, vol. iii. (1886), No. 407.

**2440b.** A Traumatic Rupture of the Bladder. A long rent extends through the whole length and thickness of the organ, and two smaller irregular rents, into which glass rods have been passed, are situated on either side of the central laceration. The larger rupture involves the peritoneum.

From a man aged 49, who was run over by an omnibus. He stated that he had not passed water for five or six hours before the accident. He died of shock, and at the autopsy the small intestine was found to be ruptured, the mesentery was torn, and there was a comminuted fracture of the pelvis.

See *Male Surgical Register*, vol. i. (1885), No. 2873.

### **LITHOTRITY.**

**2444a.** The Bladder and Kidneys of a patient upon whom lithotritry had been ineffectually performed shortly before death. The left kidney is much enlarged, and contains numerous small miliary abscesses in its cortex. The right kidney is small, its pyramids are absorbed, and its pelvis is much dilated. The bladder is contracted and thickened; there is a small pouch behind the prostate. It contains three pieces of a recently broken uric acid calculus. In the dilated prostatic urethra is another portion of the same calculus. The fragments together weigh 17 drachms.

From a patient aged 59, who was admitted to the Hospital in a dying condition.

See *Male Surgical Register*, vol. ii. (1885), No. 3038.

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## **SERIES XXX.**

### **DISEASES AND INJURIES OF THE BRAIN AND ITS MEMBRANES.**

#### **ABSCCESS OF THE CEREBRAL CORTEX, FROM A CASE OF JACKSONIAN EPILEPSY.**

**2484a.** The Left Cerebral Hemisphere, cut transversely to show an abscess of the cortex. The section has been made through the upper part of the ascending frontal convolution, and has been carried vertically downwards. The abscess is situated in this convolution beneath

the pia mater and a thin layer of brain substance, a quarter of an inch above the fissure of Sylvius. It is conical in section, extending into the substance of the brain for five-eighths of an inch. Its base is irregularly notched. The cerebral substance for a considerable distance round the abscess has been so much inflamed that the pia mater is adherent, and the membrane has, therefore, been left *in situ*.

From a female patient aged 20, who was admitted to the Hospital with a history of headache lasting for three weeks, with some paresis of the right arm and leg, the face being unaffected. She was said to have suffered from thirteen "fits," consisting of convulsions attacking the right side of the face and spreading to the right arm and leg. The convulsive attacks were followed by aphasia. On admission she had slight facial paralysis with total loss of power in the right arm and some loss of control over the right leg. No knee-jerk or ankle-clonus could be obtained. There was aphasia and intense double optic neuritis. The lungs and heart were normal. The muscles of the right arm and leg were wasted, but reacted to the Faradaic current. Sensation was normal, and there was no verbal deafness. A week after her admission the patient developed pneumonia, purpuric spots were observed over her abdomen, the urine became albuminous, and she died a week later. At the post-mortem no meningitis or ear-disease was discovered, and there was no thrombosis in the sinuses to account for the cerebral abscess.

See *Mary Ward Book* for 1887, No. 42.

**2487a.** The Cerebellum, showing the site of a localised abscess in the left lobe, resulting from a fracture which extended transversely through the external auditory meatus and tympanum, as well as through the petrous and mastoid portions of the temporal bone. Pus was also diffused through the temporal bone, and the internal auditory meatus with the seventh pair of nerves was implicated in the suppuration. The membrana tympani was entirely destroyed.

From a man aged 43, who fell off a mail-cart on to his head, sustaining a fracture of the base of the skull. On admission he could answer questions, there was hæmorrhage from the left ear and left nostril. The pupils were equal, and he passed water naturally, but there was paralysis of the left side of the face. Three days after the accident the discharge from his ear became purulent and subsequently fœtid, and the patient died a fortnight later.

See *Male Surgical Register*, vol. ii. (1886), No. 3410.

**2499c.** A Brain infiltrated with numerous Sarcomatous Tumours, from a case in which sarcomata were also found involving the spinal cord. A large tumour involves the optic commissure; another is visible on the under surface of that portion of the corpus callosum which is turned downwards. Sarcomatous growths are also seen in the anterior cornua of the right lateral ventricle and in the third ventricle just behind the anterior pillar of the fornix. They also occurred in the dura mater round the internal auditory meatus on either side.

For further details of the case see Series xxxi. No. 2541a.



## SERIES XXXI.

DISEASES AND INJURIES OF THE SPINAL CORD  
AND ITS MEMBRANES.**SARCOMA OF THE SPINAL CORD.:**

**2541a.** The Spinal Cord from a case of multiple sarcomata affecting the brain and cord. The cord appears to be healthy, and its membranes can readily be separated as far as the lumbar swelling. From this point down to the cauda equina a tumour has grown from the cord, implicating the membranes, and rendering them so adherent that they cannot be separated without lacerating the nerve substance. The tumour has spread down the nerves. It slightly eroded the bodies of the vertebræ. Microscopically the tumour is a round-celled sarcoma.

From a woman aged 39, who became pregnant in the early part of November 1885. In January 1886 she began to suffer from anæsthesia of the legs, which was soon followed by pain in the back of the legs, extending at a later period to the hips and loins. In February paraplegia set in with paralysis of the sphincters. On June 24th there was slight optic neuritis, and subsequently pain in the head and delirium. The patient died on August 14th. From June 3d to July 20th her temperature often rose to 100°, and was sometimes higher; after the latter date, however, it never exceeded 99° F., and during the last ten days of the patient's life it became subnormal. At the autopsy numerous sarcomatous tumours were found in the brain and dura mater.

The brain is preserved in Series xxx. No. 2499c.

See *Hope Ward Book* for 1886, s. v. S. Pelly, and *Transactions of the Pathological Society*, vol. xxxviii. p. 43.

## SERIES XXXIII.

DISEASES AND INJURIES OF THE EYE AND  
ITS APPENDAGES.**SYMMETRICAL HYPERTROPHY OF THE LACRYMAL GLAND.**

**2571a.** A Lacrymal Gland removed from a boy aged 14, in whom both the glands were excised. It retains its normal shape, but measures an inch in length by a third of an inch in width. The extirpation was performed through an incision in the eyelid. Upon microscopical examination, the enlargement was found to be due to an increase in the fibrous tissue, with little if any alteration of the glandular substance.

From Francis C., aged 14, a boy of dark complexion. The swelling was first observed in April 1886, but in August of the same year both glands were enlarged and tender. No cause was known, except that he had experienced one or two severe falls, in which he struck his head with some violence. In August 1886, when the patient first came under observation, the left gland was considerably larger than

the right; but the thin hard edge of each gland could be felt distinctly through the skin. There was troublesome lachrimation.

See *Transactions of the Ophthalmological Society*, vol. vii. (1887), p. 54.

Presented by Henry Power, Esq.

## FIBROMA OF THE CORNEA.

**2589a.** An Eye with a Fibrous Tumour growing from the anterior surface of the cornea. The growth extended over two-thirds of the cornea, and formed a large projecting tumour, which was covered with a network of blood-vessels. A similar but smaller growth extended from the lower margin of the right cornea to the centre of the pupil. Microscopically the tumour is a pure fibroma.

From a rickety child aged 5. The tumours were congenital.

A section is preserved in Series lv. No 110b, and a drawing in Series lvii. No. 390a.

See *Ophthalmic Ward Book* for 1886, No. 2222.

**2640a.** A Calcareous Lens removed from the anterior chamber. It had probably been dislocated for many years previous to its removal, but had only recently been displaced in front of the iris.

From a boy aged 16, who had been blind from birth with his right eye. Three days before admission to the Hospital a round yellow object appeared in his eye, and he suffered very intense pain.

A drawing of the eye before the removal of the lens is preserved in Series lvii. No. 395g.

See *Ophthalmic Ward Book* for 1886, No. 3090.

## SERIES XXXV.

## DISEASES AND INJURIES OF THE SKIN AND ITS APPENDAGES.

### SCLEREMA.

**2700a.** Sections through the Buttock of a Child aged one month, who was born with a condition of the skin resembling sclerema. The sections show the enormous thickening of the subcutaneous tissue. Under the microscope the surface epithelium is seen to be normal; the muscular layer of the skin is much thickened, and the subcutaneous tissue shows some cell-proliferation. The capsules of the fat-cells are greatly thickened and there are numerous fat-crystals.

See *Male Surgical Register*, vol. iii. (1887), No. 61.

The specimen was exhibited before the Dermatological Society during the session 1886-87.

A drawing of the buttocks of the child is preserved in Series lvii. No. 406d.

Histological sections of the skin will be found in Series lv. No. 113h.

## SERIES XXXVI.

DISEASES OF THE TESTICLE, ITS COVERINGS,  
AND OF THE SPERMATIC CORD.

- 2743a.** Chylous Lymph from a Hydrocele. Microscopical and chemical examination shows that the fluid consists of a fine emulsion of fat, in many points resembling true chyle. It has a specific gravity of 1029.

The fluid was obtained from the servant of one of the Indian Princes who attended the Jubilee of Queen Victoria.

Presented by S. G. Shattock, Esq.

- 2754a.** Part of the Sac of a Hydrocele in which there were three nodules in a line above the epididymis. One of the nodules has been removed for examination, when it appeared to be of a bony nature. Throughout the sac are scattered numerous small and hard tubercles, and here and there are minute deep brown bodies firmly attached to the inner surface of the tunica vaginalis. Microscopically the small growths consist of fibro-cartilage.

Presented by C. B. Lockwood, Esq.

- 2797d.** A Testicle affected with Cystic Sarcoma. The new growth apparently proceeds from the rete testis, and extends upwards and anteriorly so as to involve a considerable part of the body of the organ. The lower and anterior portion of the testis, together with the greater part of the epididymis, is free from new growth. The section shows that the tumour consists of soft sarcomatous tissue containing numerous cysts, one of which is large enough to hold three ounces of fluid. Microscopically the growth is a loose fibrous matrix containing numerous round cells. Many of the cysts are lined by columnar epithelium; the cysts contained a dark blood-stained fluid.

From a man aged 61, in whom the tumour had been growing for twelve months. There was no history of injury.

See *Male Surgical Register*, vol. i. (1886), No. 573.

## DERMOID CYST OF THE TESTIS.

- 2810a.** The Right Testicle containing a Dermoid Cyst. The testicle measures two and a quarter inches in length by one and three-quarters inches in thickness. The spermatic cord is a little thickened. A black bristle has been passed into the cut end of the healthy vas deferens. The epididymis is present as a flattened band lying between the testis and the spermatic cord. The dermoid tumour occupies the whole of the body of the testis, and is enclosed by the smooth and somewhat thickened tunica vaginalis. The tumour consists of a number of cysts filled with a substance of gelatinous consistence; the cysts vary in size,

from a small pin's-head to one which occupies the whole of the posterior border of the organ. In the recent state this large cyst contained a number of long and delicate hairs, which sprang from the membrane lining the cyst. The rest of the tumour consists of masses of dense fibrous tissue with fat, and in some cases specks of calcified cartilage. Microscopical examination shows that the gland tissue has entirely disappeared from the body of the testis. The wall of the largest cyst consists of an epidermis and corium. The free edge of the epidermis is turned towards the interior of the cyst. The epidermis consists of a thick layer of stratified epithelium lying above a well-marked rete malpighii. The corium consists of dense connective tissue containing in its deeper layers a quantity of fat and a large number of hair follicles. Each follicle has well-developed sebaceous glands in connection with it, and each contains a non-medullated hair.

From a healthy child aged 4, in whom the tumour had been noticed for three years. When first observed it was growing slowly, but during the eighteen months preceding removal it increased rapidly in size.

See *Transactions of the Pathological Society*, vol. xxxviii. p. 224.

Sections are preserved in Series IV. No. 122b.

Presented by Dr. E. Stanley Wood and C. C. Harris, Esq.

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## SERIES XXXIX.

### DISEASES OF THE PROSTATE GLAND.

**2842a.** The Urinary Bladder, with great enlargement of all the lobes of the prostate gland. The bladder itself is hypertrophied and fasciculated, the mucous membrane being inflamed and slightly ulcerated round the prostate. Each lateral lobe of the prostate contains a small fibrous tumour, that in the left lobe being contained in a definite capsule. The middle lobe is pedunculated and tunnelled through its centre from the urethra. A glass rod has been passed along the channel.

From a man aged 78, who was admitted on account of retention of urine resulting from an enlarged prostate. He was sent out of the Hospital in charge of a nephew, who had instructions to pass a soft rubber catheter; but he was shortly afterwards admitted with severe hæmaturia, to which he quickly succumbed.

A kidney from the same case is preserved in Series 2335b.

See *Male Surgical Register*, vol. I. (1886), Nos. 353 and 726.

**2844a.** A Bladder and Prostate Gland. The bladder is hypertrophied, and at its upper part the mucous membrane is protruded to form a vesical hernia. The prostate is much enlarged, and encroaches upon the bladder. It contains a large sacculated abscess cavity, capable of holding three ounces of pus. The abscess did not open into either the bladder or the rectum. In order to show this abscess, the bladder has been inverted.

From a man aged 63, who was admitted three weeks before his death with a frac-



ture of the tibia and fibula. He developed symptoms of bladder-disease whilst he was in the Hospital, and the abscess could be clearly detected during life.

See *Male Surgical Register*, vol. ii. (1885), No. 2924.

#### EXCISION OF PORTIONS OF THE PROSTATE.

**2848a.** A Bladder with the Membranous Urethra, from which large portions of the prostate were removed by operation ten months before death. The patient had been four times cut for stone. The urethra opens into a pouch, which in the fresh state was capable of containing two or three ounces of fluid. The walls of the pouch are formed anteriorly of condensed fibrous tissue, and nearer to the bladder of the remains of prostatic tissue. The pouch appears to have been formed within the prostate, and to represent the part from which the prostatic tissue had been removed. It communicates by a large opening with the bladder, which is thickened and contracted in the places where it is pouched.

From a man aged 66. During the performance of lithotomy for the second time, it was found that the middle lobe of the prostate was enlarged and had been perforated by the previous use of instruments. The hypertrophied portion was, therefore, removed through a median incision. A fortnight later, the lithotomy wound was dilated, and a growth was removed from the right side of the prostate.

The portions of the prostate and the calculi are preserved in the next specimen, No. 2848b.

See *Pitcairn Ward Book*, vol. viii. p. 395, and *Male Surgical Register*, vol. iii. (1884), No. 1442, and vol. iii. (1885), No. 840.

**2848b.** The Calculi and portions of the Prostate removed from the patient mentioned in the preceding case. The total weight of the calculi is 40 grains, whilst the portions of the prostate weigh  $1\frac{1}{2}$  ounces.

See specimen No. 2848a.

### SERIES XL.

#### DISEASES AND INJURIES OF THE URETHRA AND PENIS.

**2886a.** A Portion of the Penis, showing upon the glans the scar of a venereal sore, probably a chancre.

From a dissecting-room subject.

### SERIES XLI.

#### DISEASES OF THE OVARIES.

**2908c.** An Ovary and part of a Fallopian Tube removed for chronic inflammation. The ovary is somewhat enlarged by the dropsical dila-

tation of numerous Graafian follicles. The Fallopian tube is thickened to the size of a cedar pencil, and its fimbriæ are retracted.

Presented by J. Knowsley Thornton, Esq.

**2920a.** A Multilocular Dermoid Cyst of the Ovary. Each loculus contains dermoid elements.

Presented by W. A. Meredith, Esq.

**2925a.** One-half of a Solid Tumour of the Ovary, which was removed from a woman aged 40, who had dysmenorrhœa for a year, but without any definite symptoms of ovarian disease. The duration of the growth was quite uncertain. The patient was in good health a year after its removal. Microscopical examination shows that the structure of the tumour is exactly similar to that of a normal ovary, closely resembling a spindle-celled sarcoma.

**2929a.** Portions of the Ovaries mounted in glycerine jelly. The ovaries present the appearances of a cystic chorion, being composed of translucent and pedunculated papillary growths, which, on microscopical examination, proved to be a myxo-sarcomatous growth, the peculiar cystic appearance being due to myxomatous degeneration, which is not truly cystic.

From a woman aged 48, who died with cancer of the abdominal wall and hydro-peritoneum.

See *Hope Ward Book* for 1885, No. 237; *Medical Post-Mortem Book*, vol. xii. p. 154, and *Transactions of the Obstetrical Society*, vol. xxviii. p. 180.

**2951d.** A Sagittal Section of the Uterus and Bladder from a case of parametric abscess of the right broad ligament and iliac fossa. The uterus and ovaries are displaced towards the left side of the pelvis. The abscess cavity is seen to extend into the cellular tissue between the uterus and the bladder.

Details of the case, with a further description, will be found in the *Transactions of the Obstetrical Society*, vol. xxix. p. 147.

A drawing of the parts as they appeared *in situ* is preserved in Series lvii. No. 516d.

## SERIES XLIII.

### DISEASES OF THE UTERUS.

#### HÆMATOMETRA.

**2956a.** A Vertical Section of a large Hæmatometra. The whole uterus when empty weighed 15 lbs. Its vertical height, measured parallel to the broad ligaments, was ten inches. Its depth antero-posteriorly was twelve inches, and its transverse diameter was ten inches. The tumour

was divided into two parts by the broad ligaments, the origins of the Fallopian tubes being seven inches apart. The posterior portion is the cavity of the uterus enormously enlarged; it was filled with retained blood, much of which was of the consistence of mortar. The anterior portion of the tumour is apparently solid; it forms about two-thirds of the whole mass. The surface of the posterior part resembles a uterus in an advanced stage of pregnancy. The surface of the anterior part is fibroid and is covered with adhesions. The left Fallopian tube is much thickened, and it is dilated in its outer part. It measures twelve inches in length and contained blood. The left ovary is much elongated; it measures three inches in length, and contains a single cyst at its outer extremity. The right ovary and a large portion of the Fallopian tube are absent, but they were apparently identical with the left. On making a section of the uterus, the anterior portion was seen to consist of a large tumour, measuring seven inches in its antero-posterior diameter. It is everywhere encapsuled by the wall of the uterus, except posteriorly, where the cavity of the tumour opens into the cavity of the uterus by an oval and well-marked aperture, measuring five inches in its vertical and three and a half inches in its transverse diameter. This opening is formed by the wall of the uterus, which is two and a half inches in thickness at this part below, and one and a quarter inches above. It is crossed by a ridge of hard coagulated blood half an inch in thickness. Immediately beneath the capsule is a layer of calcareous deposit. The tumour itself cannot apparently be separated from its muscular capsule at any point. The tumour is of a red fleshy appearance and the whole of its central portion has broken down, forming a large irregular cavity completely filled with putty-like blood. The cavity of the uterus measures ten inches in length by four inches in depth. The tumour is a fibro-myoma, the external firmer parts containing more muscular tissue than the internal softening parts. The outer layers are calcified to a considerable extent. The cause of hæmorrhage was not discovered. The tumour presents the appearances found in ordinary mucoid softening. [In the first Gallery, in a flat case.]

From a woman aged 46. The tumour had been growing for twelve years, and the patient had suffered from menorrhagia until  $3\frac{1}{2}$  years previous to removal, when the catamenia ceased suddenly. She experienced irregular and severe contractile pains, which first came on two months after the menopause. The tumour had not increased in size since the cessation of the catamenia. After removal it weighed 21 lbs.

The other half of the specimen is in the Hunterian Museum.

See *Transactions of the Obstetrical Society* for 1887.

Presented by W. A. Meredith, Esq.

#### CYSTIC ADENOMA OF THE CERVIX UTERI.

2960a. The Anterior Lip of a Cervix Uteri, enlarged so as to form an oval tumour, which protruded through the vulva of a woman aged 32, who was believed to be in the third month of her third pregnancy. The tumour lay with its long axis horizontal and transverse, measuring

two and a half inches. On section it was seen to be a spongy mass, which exuded large quantities of the tenacious mucus characteristic of the cervix. Microscopically the cavities were lined with a single layer of columnar epithelium.

See *Martha Ward Book* (1886), s. v. Hannah Hogg.

**3008a.** The Vaginal portion of a Cervix Uteri, which was removed by the *écraseur* from a lady. The specimen shows an extremely early stage of cancerous disease, as it is just beginning to be infiltrated with an epitheliomatous growth, which has apparently started from the external tissue.

**3015c.** A Portion of an enlarged Anterior Lip of the Cervix of a nulliparous woman, aged 17. The growth returned within three months of the operation. Microscopical sections show that it consists of a sarcoma undergoing myxomatous degeneration, and containing minute masses of hyaline cartilage, which are not always separated from the surrounding tissue.

The patient had suffered for six weeks from menorrhagia with mucous discharges. The tumour formed a soft lobulated mass, which bled freely on examination, and exuded a sticky fluid on section. The disease extended rapidly.

See *Transactions of the Obstetrical Society*, vol. xxviii. p. 178.

A section is preserved in Series lv. No. 130q.

Presented by Dr. Galabin.

## TUBERCLE OF THE MUCOUS] MEMBRANE [OF THE BODY OF THE UTERUS.

**3015d.** The Uterus and its Appendages, from a patient who died of tubercular phthisis. The lining membrane of the fundus shows caseous infiltration and thickening, with some irregular ulceration. The uterine cavity is dilated and was filled with a slightly gelatinous curdy fluid. The cervical canal is free from disease. The left Fallopian tube is thickened, and caseous nodules occur in its wall. Microscopical examination of the caseous lining of the fundus showed the presence of a small number of tubercle bacilli.

From a girl aged 14, who had never menstruated. In addition to phthisis, she suffered from tubercular meningitis and chronic peritonitis. She was only ill for three months. At the autopsy no tubercles were found in connection with the peritoneum.

Presented by Percy Kidd, Esq.

## SERIES XLVIII.

### DISEASES OF THE MAMMARY GLAND.

**3152a.** Portions of a Sero-Cystic Tumour of the Breast. The tumour is hard, and appears gelatinous on section. It contains numerous small



cysts, which are filled with a proliferating adenoid tissue. Microscopic examination showed that the growth was a fibro-sarcoma, the stroma being in parts fibrous and in parts myxomatous, with oval and spindle cells scattered through the matrix. The cysts were lined with spheroidal epithelium. A few ducts and acini of the mammary gland still remained.

From a thin woman, aged 29, the mother of two children. The swelling had been observed for a year; it grew slowly, and with little pain.

See *Female Surgical Register*, vol. i. (1886), No. 2639\*.

### LIPOMA OF THE BREAST.

**3160a.** A Fatty Tumour removed from the neighbourhood of the breast. It lay in close connection with a thin-walled simple cyst filled with brownish serous fluid. The lipoma easily shelled out; it is circular in shape, and is of the usual structure. It measures an inch and a half in diameter.

From a patient aged 55, who had noticed a tumour on her left breast for about six months. It was hard, tense, and freely movable. The distal portion felt somewhat softer than the main part of the tumour.

Presented by Thomas Smith, Esq

## SERIES L.

### GENERAL PATHOLOGY.

**3318b.** A Portion of a Melanotic Growth, removed from the sole of the foot of a Hindu. The growth is circular in outline and is flat. It has the appearance of having burst through the cuticle, which it slightly overlaps at its edges. It measures about two inches in diameter. The surface is smooth, shining, and coal-black in colour. Microscopically it presents the appearance of a melanotic alveolar sarcoma. The alveoli as well as the stroma contain spindle and round cells. Most of the cells enclose granules of pigment, which in many cases are so numerous as to obscure the nuclei. Besides the pigment contained in the cells, there are masses of free pigment throughout the stroma.

From a man aged 75 years, who stated that the growth commenced eight months before its removal as a crack in the sole of the foot. There was neither pain nor induration in the surrounding tissues, but scattered over the sole were a number of pigmented patches. The lymphatic glands of the groin were considerably enlarged and somewhat hard.

A section is preserved in Series Iv. No. 113g.

See *Transactions of the South Indian Branch of the British Medical Association for June 1886*, p. 25.

Presented by Dr. Maitland.

- 3324b.** A Large Warty Mass which grew round the anus of a man aged 31. It is sessile, and has very much the appearance of a cauliflower. Microscopically it consists of simple papillomatous tissue.

A growth was first noticed in this position twenty months previous to the admission of the patient to the Hospital. It was removed, but in four months the present growth appeared. After removal it measured 9 inches by 6. There was much offensive discharge from the growth, and the inguinal glands were inflamed.

A drawing is preserved in Series lvii. No. 553a.

See *Male Surgical Register*, vol. i. (1886), No. 3791\*.

- 3375d.** A Small Barren Cyst or Hygroma, removed from the palpebral conjunctiva of a child aged one month. The cyst measures three-quarters of an inch in its long diameter.

See *Male Ophthalmic Register* for 1887, No. 350.

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## SERIES LI.

### VARIOUS INSTRUMENTS AND SUBSTANCES PRODUCING INJURIES.

- 3384a.** A Percussion Cap enclosed in a capsule of connective tissue.

The cap was removed from the palmar surface of the left middle finger of a girl aged 19, a maker of ammunition. It had remained *in situ* for two months. As soon as an incision was made into the tumour, the foreign body was expelled with considerable violence.

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## SERIES LII.

### URINARY CALCULI.

- 188a.** A Collection of Calculi.

In the majority of cases the stones were removed by the operation of lateral lithotomy.

Presented by T. F. Odling, Esq., resident in Shiraz, Persia.

- (a). An Oval Stone, weighing 23 grammes.

It was removed by lateral lithotomy from Kherrim, aged 19, who had symptoms of stone for twelve years. On passing the staff previous to the commencement of the operation, a small flattened calculus weighing a gramme was found lying in a pouch of the urethra. The operation was performed on August 26th, and the patient was discharged cured on September 25th.

- (b.) Four Calculi, weighing 70.7 grammes.

Removed by lateral lithotomy from a boy aged 17, who recovered from the effects of the operation in twenty-five days.

- (c.) A Round Light-Coloured Stone, weighing 12 grammes.

Removed by lateral lithotomy from a boy aged 6 years, the son of Saffir Kowaree. Two days later the patient was doing well.

- (d.) A Large Oval Calculus, weighing 57 grammes.

It was removed by lateral lithotomy from a patient aged 18, who died on the fifth day after the operation.

- (e.) Fragments of a Calculus, weighing 8 grammes.

They were removed by lithotritry from Hassan Ali at five sittings, between November 24th and December 15th, 1880. The patient was quite well two years after the operation.

- (f.) An Irregular Black and White Calculus, weighing 23 grammes.

It was removed by lateral lithotomy from a boy aged 12 years, who had suffered for two years from symptoms of stone.

- (g.) An Oval Stone, weighing 18 grammes.

It was removed from a boy aged 16, who had suffered from symptoms of stone for four years. The calculus was removed by the operation of lateral lithotomy on August 26th, 1884. An abscess subsequently formed in the track of the wound, but the patient was eventually discharged cured on October 26th of the same year.

- (h.) A Circular Calculus, weighing 8 grammes.

It was removed from a boy aged 9 years, who had suffered from symptoms of stone ever since he was 2 years old. The operation was performed on August 12th, and the patient was discharged on August 24th, 1885.

- (i.) An Oval Calculus, weighing 7 grammes.

From a boy aged 6. It was removed on April 9th, and the patient was discharged on May 5th, 1880.

- (j.) A Nodulated Oval Calculus, weighing 10 grammes.

From a boy aged 11 years, who had suffered for nine years from symptoms of stone. It was removed on April 15th, 1880, but the patient was not discharged until May 31st, as an abscess formed in the track of the wound.

- (k.) A Rounded Calculus, weighing 27 grammes.

Removed by lateral lithotomy from a boy aged 12 years. The patient was well nourished and healthy, and had suffered from symptoms of calculus for six or seven years. During the three months preceding the operation, the pain had been very severe. He died fifty-one hours after the operation.

- (l.) A Calculus measuring  $1\frac{5}{8}$  inch in length, and weighing 8 grammes.

The stone was removed from a pale ill-nourished boy aged 5 years, who had suffered from symptoms of it for two and a half years. He completely recovered in twenty days.

- (m.) An Oval Calculus measuring  $1\frac{3}{8}$  inch in length, and weighing 11 grammes.

The stone was removed by lateral lithotomy from an insufficiently fed boy aged  $3\frac{1}{2}$  years, who had symptoms of a vesical calculus for two years. The wound healed in eighteen days.

- (n.) A Stone measuring  $1\frac{1}{4}$  inches in length, and weighing 10 grammes.

It was removed from a boy aged 6 years on July 6th, 1883, and the patient was discharged cured on July 25th of the same year.

- (o.) A nearly Circular Calculus, weighing 12 grammes.

Removed by lateral lithotomy from a boy aged 6 years. All the urine was passed by the urethra on the day following the operation, and the wound was completely healed ten days later.

- (p.) A Smooth Oval Calculus, weighing 14 grammes.

Removed by lateral lithotomy on September 20th, 1886, from a boy aged 9 years. The child was discharged on October 11th. The symptoms had existed for three years, during which time the child was constantly pulling at his penis and inserting his fingers into the rectum.

- (r.) An Oval Calculus, weighing 11 grammes

Removed from a boy aged 14 years. The operation was performed on October 3d, and the patient was discharged on October 20th, 1884.

- (s.) An Oval Smooth Calculus, weighing 22.5 grammes.

It was removed by lithotomy from Md. Hassan, aged 16 years, Keziroonce, but at present resident in Shiraz. Profuse secondary hæmorrhage succeeded the operation. The bladder was filled with clotted blood, which was removed by syringing with ice-cold water. The patient eventually made a good recovery.

- (t.) A Large Rough and Irregularly Circular Stone, weighing 31.5 grammes.

Removed by lithotomy from Mashallah, aged 17 years, son of Ali Morad Shirazee, bath attendant. The operation was performed on June 8th, and the patient was discharged on July 3d, 1885. There was some hæmorrhage on the night following the operation, but it was arrested by plugging the wound and the application of ice to the rectum. The boy had some tendency to hæmophilia.

- (u.) A Mulberry Calculus, stained of a deep brown colour, and weighing 13 grammes.

It was removed by lithotomy from a boy aged 20, who had suffered for eleven years from symptoms of stone. He also had phthisis. The operation was performed on August 12th, 1885, and the patient was discharged cured on August 31st.

- (v.) A Calculus weighing 0.27 grammes.

Removed from the urethra of a child aged 2 years. The orifice of the urethra had to be slightly enlarged before the stone could be removed.

- (w.) A Small Discoid Calculus, weighing 1 decigramme.

Removed from the urethra of a boy aged 7 years. The patient had been circumcised the week previously.

- (x.) A Stone weighing 3.8 grammes.

Removed from a boy aged 3 years old. The operation was performed on September 4th, 1881. The patient had an attack of intermittent fever, which lasted from September 18th to September 26th, but was discharged cured on October 6th.



## (y.) A Calculus weighing 7.7 grammes.

Removed by lateral lithotomy from a boy aged 8 years. The operation was performed October 23d, and the wound had healed on November 20th, 1879.

## (z.) A Stone weighing 11.4 grammes.

Removed from an ill-nourished and small-pox marked boy aged 5 years. The symptoms had lasted for eighteen months. The stone was removed on May 6th, and the patient was discharged cured on June 27th, 1881.

(aa.) A Calculus weighing 0.15 grammes, and measuring  $\frac{7}{16}$ th inch in length.

It was removed by incision from the urethra of a boy aged 19 months. It was situated immediately behind the glans penis.

(bb.) A Large Smooth and Oval Calculus, weighing 93.07 grammes. It measures  $2\frac{3}{16}$ th inches in length,  $1\frac{3}{4}$  inches in width, and  $1\frac{3}{8}$  inches in depth.

It was removed from a man aged 23 years. The wound healed in twenty days.

(cc.) Two Uric Acid Calculi, weighing together 57.7 grammes. The larger stone is oval and measures  $2\frac{1}{4}$  inches in length, whilst the smaller faceted stone measures  $1\frac{1}{2}$  inches in length.

Removed by lateral lithotomy from a man aged 39 years. The operation was performed on May 17th, and the wound was healed on June 20th, 1875.

(dd.) An Elongated Oval Phosphatic Calculus, measuring  $2\frac{15}{16}$  inches in length, and weighing 36.4 grammes.

It was removed by lateral lithotomy from a patient aged 13 years on October 3d, and the wound was healed on November 6th, 1877.

(ee.) A Uric Acid Calculus, weighing 62.3 grammes, and measuring in its greatest diameter  $1\frac{13}{16}$  inches.

It was removed by lateral lithotomy from a boy aged 17 years on August 18th, 1879, and the wound was healed on September 17th.

## (ff.) A Portion of Calculus removed by lateral lithotomy from a boy aged 18 years. The stone was crushed by the forceps during removal from the bladder, but so much of it as has been preserved weighs 31.6 grammes.

The operation was performed on June 9th, and the wound was healed on June 27th, 1879.

## (gg.) A Phosphatic Calculus, weighing 14.1 grammes.

Removed by lateral lithotomy from a boy aged 12 years. The operation was performed on December 21st, 1879, and the wound was quite healed on January 14th 1879.

## (hh.) A Pyramidal Calculus, weighing 17.1 grammes.

Removed by lateral lithotomy from a boy aged 17 years. The stone was removed on July 10th, 1878, and the patient was discharged cured on August 4th.

(ii.) A Calculus weighing 13 grammes.

Removed from a boy aged 13 years. The operation was performed on April 11th, and the patient was well on May 4th, 1878.

(jj.) A Calculus weighing 21.51 grammes.

Removed by lateral lithotomy from a man aged 22. The patient died five days after the operation.

(kk.) A Calculus weighing 23.8 grammes.

Removed by lateral lithotomy from a patient aged 19 years on December 14th, 1877. The patient was discharged cured on December 31st of the same year.

(ll.) A Calculus weighing 34.1 grammes.

Removed by lateral lithotomy from a man aged 24 years. The operation was performed on December 14th, 1877, and the patient had recovered on January 5th, 1878.

(mm.) A Smooth Circular Calculus, weighing 30.3 grammes.

Removed by lateral lithotomy from a patient aged 19 years on February 9th, 1879. The patient was discharged cured on March 4th.

(nn.) A Smooth Calculus, weighing 15.9 grammes.

Removed by lateral lithotomy from a patient aged 14 years. The operation was performed on October 7th, and the patient had recovered on November 21st, 1879.

(oo.) A Mulberry Calculus, weighing 4.1 grammes.

Removed by lateral lithotomy from a boy aged 3 years. The patient was discharged cured on the twentieth day after the operation.

(pp.) A Calculus weighing 14 grammes.

It was removed by lateral lithotomy from a boy aged 14 years on December 31st, 1877, and the patient had recovered on January 31st, 1878.

(qq.) An Oval flattened Calculus, weighing 13.2 grammes.

It was removed by lateral lithotomy from a dervish aged 28 on June 4th. The patient was cured on June 27th, 1875.

(rr.) A Mulberry Calculus, weighing 10.9 grammes.

It was removed by lateral lithotomy from a boy aged 14 years on April 22d, 1875. The patient was discharged cured on July 12th of the same year.

(ss.) A Flattened Oval Calculus, weighing 11.3 grammes.

Removed by lateral lithotomy from a man aged 63 years on April 16th, 1875. The patient was discharged cured on May 20th.

(tt.) A Small Smooth Stone, weighing 3.3 grammes.

Removed from a patient  $3\frac{1}{2}$  years of age. For six months after recovery he was free from symptoms of vesical calculus, but he then began to suffer, and a second stone, weighing 6.7 grammes, was removed by lateral lithotomy. The symptoms experienced on the second occasion were severe pain on micturition with the passage of blood and pus.

(uu.) A Mulberry Calculus, weighing 4.6 grammes.

Removed by lateral lithotomy from a boy aged 13 on October 3d. The patient was discharged cured on November 3d, 1877.

- (v.) Four Fragments of a facettèd stone, weighing 5.7 grammes.

Removed by dilatation of the urethra from a woman aged 40. Five days after the operation all pain and swelling had subsided, and three weeks later she was able to retain her water.

- (vi.) A Flattened Stone with irregular extremities, weighing 8.3 grammes.

The calculus was removed from a boy aged 11 years on June 4th, and the patient was discharged cured on June 21st, 1879.

- (vii.) A Mulberry Calculus, weighing 5.9 grammes, and consisting chiefly of oxalate of lime.

It was removed from a boy aged 10 years. The operation was performed on July 5th, 1878, and the patient had recovered on July 28th.

- (viii.) A Mulberry Calculus, weighing 4.7 grammes. It is somewhat darker in colour than the preceding.

From a boy aged 7 years. Lateral lithotomy was performed on October 4th, and the boy had recovered on October 27th, 1877.

- (ix.) An Oval Calculus which lay in a pouch in the bladder in such a manner that it was only once felt by the sound. It weighs 9.9 grammes. Previous to its removal by lateral lithotomy an attempt was made to crush it as it lay in the bladder.

From a man aged 55 years, who died of exhaustion on the seventh day after the lithotomy.

- (x.) Two Calculi, removed from a boy aged 11 years. One is friable, weighing 5.7 grammes; the other is an oxalate of lime mulberry calculus, which weighs 5.1 grammes.

The calculi were removed on November 30th, and the patient had recovered on December 21st, 1878.

- (xi.) A Small Calculus, weighing 0.3 gramme.

Removed from the urethra of a boy aged 6 years. It was impacted near the orifice, and a slight incision was necessary to remove it.

- (xii.) A Spherical Light-Coloured Calculus, weighing 11.5 grammes.

It was removed from Hashem, aged 6 years, the son of Saffir Kowaree, by the operation of lateral lithotomy.

- (xiii.) An Oval Calculus, weighing 11.5 grammes.

Removed from a boy aged 6 years, who had experienced the symptoms of stone for fifteen months.

- 218b. A Calculus which lay unsuspected in the upper part of the right ureter. The stone measures half an inch in length by a quarter in breadth, and consists of a thin shell of uric acid surrounding a dark mass which appears to be a blood-clot. The kidney was much disorganised.

From a man who was brought to the Hospital on account of severe hæmorrhage from a cancerous ulcer of the tongue. He died on the day following his admission.

*Male Surgical Register*, vol. iv. (1887), No. 139.

**FRAGMENTS OF CALCULI REMOVED BY LITHOLAPAXY.**

- 227a. Fragments of a Calculus removed by Bigelow's operation from a child aged 15 months. The fragments together weigh when dry one grain. They consist of phosphates and uric acid.

From a child who was admitted with retention of urine. On sounding, a stone was found in the bladder.

See *Male Surgical Register*, vol. iii. (1887), s. v. Andrew Lohoar.

- 227b. Fragments of a Calculus removed by Bigelow's operation of litholapaxy from a boy aged 6 years, who had complained for one month of hypogastric pain with frequent micturition. The meatus was incised at the time of the operation, which lasted fifty-five minutes. The lithotrite was introduced twice, and the patient was discharged two days afterwards.

See *Male Surgical Register*, vol. iii. (1887), No. 2086.

- 227c. Fragments of a Calculus which weigh 7 grains. They were removed by Bigelow's method from a boy aged 11 years. The calculus was composed of uric acid with a coating of phosphates. The patient made a good recovery, and was discharged ten days after the operation.

See *Male Surgical Register*, vol. iii. (1886), No. 3316.

- 234a. Seven Small Uric Acid Calculi passed at different times per urethram. The calculi are round, with a curiously spiked appearance. They are hollow, and weigh together 7 grains.

From a gentleman aged 77, who until a year before their passage had no reason to suspect that he had either renal or vesical malady. A catheter was passed on account of senile enlargement of the prostate; cystitis was set up, and in a few days the calculi were passed per urethram. He had no renal colic.

Presented by Dr. Gripper.

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**SERIES LIII.**

**CALCULI AND OTHER CONCRETIONS FORMED  
IN THE DIGESTIVE ORGANS.**

- 245a. A very Large Salivary Calculus, removed, with the submaxillary gland, from a gentleman aged 52. The calculus weighs 4.4 grammes, and measures an inch in its long axis, and one and a half inches in circumference at its thickest part.

The submaxillary gland and calculus were removed through an incision in the neck. The presence of the calculus was suspected, but was not discovered until the



gland was removed, for it lay deeply embedded in the commencement of Wharton's duct. The patient had been subject to occasional swelling of the submaxillary region for more than forty years, and for some time past there had been permanent enlargement and suppuration of the salivary gland.

The gland is preserved in Series xiv. No. 1826a, and a cast of the stone in Series lvi. No. 117a,

[Presented by H. T. Butlin, Esq.]

**245b.** A Large Salivary Calculus, removed from the duct of the submaxillary gland. The calculus measures seven-eighths of an inch in length by five-eighths of an inch in diameter at its thickest part.

**245c.** A Salivary Calculus, removed from the left submaxillary gland. The stone is irregularly oval in shape, and lay just at the junction of the gland with its duct. It weighs 7 grains. The smaller portion of calculus which lies above it was passed by the same patient four years previously.

The stone was first observed in January 1886, but the patient experienced no inconvenience from it until April, when it caused pain in eating. At the beginning of May the gland became swollen and painful. The patient was of a gouty family, and was subject to asthma and prurigo. He had once passed a renal calculus consisting of calcium oxalate.

Presented by J. Bywater Ward, Esq.

**245d.** A Small Oval Salivary Calculus, weighing 1 grain. It was removed through an incision in the floor of the mouth from the right duct of Wharton.

The patient was a young gentleman aged 18, who for two days previously had complained of great pain and swelling in the submaxillary region, occurring a few minutes after eating solid food. For six months he had suffered from occasional slight pain, and there had been an ill-defined swelling in the submaxillary region.

Presented by L. A. Lawrence, Esq.

#### **BILIARY CALCULUS IMPACTED IN THE INTESTINE AND REMOVED BY OPERATION.**

**274b.** A Gall-Stone removed from the small intestine, where by its impaction it had given rise to acute obstruction. The calculus is cylindrical in shape and stained of a deep brown colour, which approaches to black at its extremities. One end is rounded, but the other is flattened, and has evidently lain in contact with a second calculus. The surface of the stone is tuberculated, and it has the soapy feel of cholesterin. It measures one and three-quarters inches in length and three and three-quarters inches in circumference, and weighs 20.34 grammes.

A drawing is preserved in Series lvii. No. 609.

See also the *Lancet*, vol. ii. (1887), p. 1103.

Presented by T. Smith, Esq.

SERIES LIV.

CONCRETIONS FROM THE CIRCULATORY AND  
OTHER ORGANS.

**NASAL CALCULUS.**

- 303a.** An Irregularly Square Rhinolith, measuring nearly an inch across. Chemical examination shows that it consists of a mixture of calcium carbonate and phosphate. It weighs 33 grains, and appears to have been formed round a piece of rag, which has served as a nucleus.

The concretion was removed from the inferior nasal meatus of a girl aged 24, who gave an indistinct history of having had a foreign body in her nose for twenty years. [See *Transactions of the Pathological Society*, vol. xxxviii. p. 321.

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SERIES LV.

PATHOLOGICAL MICROSCOPIC SPECIMENS.

- 21b.** Sections of a Round-Celled Sarcoma which grew in the centre of the shaft of a femur.

From Series i. No. 475b. ]

- 53i.** A Section of a Synovial Fringe from the knee-joint of a patient who had locomotor ataxia. The synovial membrane contains numerous miliary tubercles.

Presented by A. A. Bowlby, Esq.

- 64c.** Section of a Small Artery, showing the changes which take place in atheroma.

- 64d.** Sections through the Common Iliac Artery, from a case of multiple embolic aneurysm. The sections are taken at the seat of the embolism, and shows the complete destruction of the internal coat, and the infiltration of the middle and outer coats with cells. Portions of the calcareous embolus are also visible.

- 64e.** A Section through a plugged Anterior Cerebral Artery, from the same case as the preceding. The destruction of the anterior wall in the neighbourhood of the embolus is well seen.

From specimens No. 1460 b and d. Drawings of these two microscopical preparations are preserved in Series lvii. Nos. 108 e and f.

Presented by A. A. Bowlby, Esq.

- 67d.** Section of a Glandular Polypoid Growth of the Larynx. It is covered externally by round cells intermixed with short columnar epi-

thelium, and consists of loose fibrillated tissue containing gland tubes which are lined by columnar cells.

From Eliz. Wassam. [Removed in the Throat Department.]

- 69d. A Section of Lung from a case of diffuse symmetrical pulmonary cirrhosis. The disease consists essentially of a fibroid induration, which attains its highest development in the peribronchial sheath. An excessive development of capillary-like vessels has taken place in the cirrhotic portions of the lung.

See Series xi. No. 1704b.

*Transactions of the Pathological Society*, vol. xxxvii. pp. 128-130.

Presented by Percy Kidd, Esq., M.D.

- 70h. Section of the Lung of a Child aged 11 months. The lung is infiltrated with tubercle.

From Series xi. No. 1724a.

- 70i. A Section of Lung stained to show the tubercle-bacilli.

Prepared and presented by S. J. Bokenham, Esq.

- 70k. Arterioles of Lung plugged with micrococci, from a patient aged 7, who died of pyæmia.

- 71f. Sputum from a patient who died of pneumonia. The tissue is stained to show the diplococcus pneumoniae.

Prepared and presented by L. E. Shore, Esq.

- 71g. Section of a Lung invaded by a spheroidal-celled carcinoma.

#### TUMOURS OF THE PALATE.

- 73i. Section of a Tumour of the Palate. The growth presents the appearances of a glandular formation in which the gland tissue is in most parts very imperfectly formed. It consists of cells which are evidently epithelial, and which are usually arranged in irregular masses, separated one from another by a homogeneous stroma, which appears to be formed by the degeneration of the cells themselves. Definite gland-tubes can be seen here and there, and in one part well-formed cell-nests are visible. The epithelial cells are usually small and round, but they are squamous in the neighbourhood of the nests.

See *Transactions of the Pathological Society*, vol. xxxviii. p. 348.

From Series xii. No. 1800b.

- 73j. A Section of a Tumour of the Palate. The stroma is composed of fibrous tissue and hyaline material. It contains small irregular masses of epithelial cells with a few cell-nests. Above, at one portion of the tumour, near the margin, the cells are more numerous, larger, and collected into masses, which are enclosed in definite alveoli.

**73k.** A Section of a Tumour removed from the Antrum three weeks after the removal of the growth from which the preceding section was taken. The growth is composed of a fibrous stroma enclosing very definite alveoli, which contain masses of granular epithelial cells. The growth is evidently carcinomatous, and exactly resembles some portions of Section 73j.

From Series xii. No. 1800c.

#### **TUMOURS OF THE TONGUE—SOFT FIBROMA.**

**70d.** A Section of a Soft Fibroma of the Tongue. The growth is composed of a fibrous matrix in which spindle cells mixed with a few oval cells are embedded. There are several well-formed blood-vessels.

From Series xii. No. 1785b.

**78c.** Section of a Tongue affected with Ichthyosis and invaded by Epithelioma.

**82e.** A Section of a Parotid Tumour, composed of a basis of connective tissue, in which are embedded masses of hyaline cartilage.

**83e.** A Section through the Skin in the neighbourhood of a lymphangioma.

**87j.** A Section through a Polypus of the Rectum, composed of delicate gland tissue lined with cylindrical epithelium. The tubules are embedded in a stroma containing many cells.

Presented, with the three preceding specimens, by A. A. Bowlby, Esq.

**90s.** Section of a Carcinoma of the Thyroid Gland.

**90t.** Section of a Lipoma of the Liver.

#### **DISEASES OF THE LYMPHATICS.**

**90u.** Section of a Lymphatic Gland infiltrated with epithelioma.

The primary growth occurred in the tongue.

**90v.** Section of a Lymphatic Gland removed from the axilla. It is infiltrated by a growth of scirrhus cancer.

**90w.** Section of a Round-Cellled Sarcoma invading the liver.

**90x.** A Section of Spleen which has undergone amyloid degeneration.

The specimen has been stained with methyl-violet.

Presented by E. Wynne, Esq.



- 92b. Section of a Kidney in an early stage of interstitial nephritis.
- 92c. Section of a Kidney in a more advanced stage of interstitial nephritis.
- 92d. Section of a Kidney in an early stage of parenchymatous nephritis.
- 92e. Section of a Kidney in a later stage of parenchymatous nephritis.
- 93g. Section of a Kidney in an advanced condition of suppurative inflammation. In some parts the secreting substance has entirely disappeared, its place being taken by diffuse collections of leucocytes. The blood-vessels are greatly enlarged.

See a drawing of the kidney from which this section was taken in Series lvii. No. 306a.

#### **TUMOURS OF THE BLADDER—PAPILLOMATA.**

- 95aa. Sections of a Papillomatous Tumour of the Bladder. The delicate processes of connective tissue are covered with several layers of columnar and spheroidal epithelium.

From Series xxix. No. 2417.

- 95bb. Sections of a Papillomatous Tumour of the Bladder. It consists of delicate processes of connective tissue covered with numerous layers of columnar and spheroidal epithelium.

From Series xxix. No. 2418.

#### **SARCOMATA.**

- 95cc. Sections of a Sarcomatous Tumour of the Bladder. The growth consists of numerous small round cells embedded in a homogeneous matrix.

From Series xxix. No. 2430.

- 95dd. Section of a Sarcomatous Tumour of the Bladder. The growth consists of round cells with little or no matrix. It infiltrates the vesical wall.

From Series xxix. No. 2428.

- 95ee. Section of a Tumour of the Bladder. It appears to be of the nature of an alveolar sarcoma.

From Series xxix. No. 2419.

- 95ff. Section of a Tumour of the Bladder. The growth is a round or spindle celled sarcoma, which is undergoing mucoid degeneration.

From Series xxix. No. 2429.

**CARCINOMATA—(A.) EPITHELIOMATA.**

**95gg.** A Section of a Tumour springing from the wall of the Bladder. It is an epithelioma, the cells being small, round, oval, polygonal, and squamous. It contains many typical cell-nests.

From Series xxix. No. 2426.

**95hh.** A Section of a Tumour springing from the wall of the Bladder. The muscular coat is infiltrated with cells which cannot be distinctly focussed. The growth is probably epitheliomatous.

From Series xxix. No. 2421.

**(B.) ALVEOLAR CARCINOMATA.**

**95ii.** A Section of a Typical Alveolar Carcinoma springing from the wall of the Bladder. The cells are round or oval, with a few short columnar ones intermingled.

From Series xxix. No. 2425.

**95jj.** Section of a Tumour springing from the wall of the Bladder. The growth is an alveolar carcinoma. The cells are large and irregular in shape; the alveoli are small. The muscular coat of the organ is infiltrated by the cells.

From Series xxix. No. 2424.

**95kk.** Section of a Tumour of the Bladder. The growth is an alveolar carcinoma, consisting of columnar and spheroidal cells contained in alveoli formed by connective tissue. The muscular coat is infiltrated as in the preceding specimen.

From Series xxix. No. 2420.

**95ll.** Section of a Tumour of the Bladder. The growth is an alveolar carcinoma. The cells, which are of epithelial origin, are large and polygonal; they lie in alveoli.

From Series xxix. No. 2422.

**95mm.** Section of an Alveolar Carcinoma of the Bladder. The alveoli are small; the cells are very large, and are often vacuolated; some are round, and others are polygonal.

[From Series xxix. No. 2423.

**95nn.** Section of an Alveolar Carcinoma of the Bladder. The growth consists of numerous round and short oval cells, which are embedded in a matrix of fibrous tissue. The fibrillated surface is produced by the cell masses discharging into the bladder, leaving the fibrous septa to float freely.

From Series xxix. No. 2427.

The fourteen preceding specimens were described and presented by  
A. A. Bowlby, Esq.

9500. Section of an Encephaloid Cancer invading the Bladder. The cancer is in parts undergoing colloid degeneration.

96d. Section of a Pure Fibroma which grew from the dura mater over the convex surface of the cerebral hemispheres.

From a subject brought in for dissection.

### THE BRAIN—SYPHILIS.

99b. Section of a Tumour of the Brain removed from the anterior portion of the right temporal lobe, showing a gummatous infiltration and an artery partially occluded by chronic syphilitic inflammation.

From a man aged 50, who had symptoms of syphilis. Four years before his death he complained of severe pain in his back, which extended to his head, with intense sickness. Subsequently he had symptoms of locomotor ataxy, and he gradually developed left hemiplegia with symptoms of cerebral irritation. At the autopsy the whole surface of the brain was found to be much engorged, and lymph was extravasated on its surface. The cerebellum was very soft. A large clot of long standing extended from the right to the left ventricle, and there were old abscesses in both hemispheres.

Presented by E. Thurlow Prior, Esq.

99c. Section of a Caseous Tumour of the Cerebellum.

The cerebellum containing the tumour is preserved in Series xxx. No. 2502c.

Presented by Dr. Sympton.

102d. Section of an unusual form of Melanotic Sarcoma of the Brain.

Presented by E. Wynne, Esq.

107f. A Series of Forty Sections made through a Spinal Cord, from a case of fracture-dislocation of the fifth and sixth dorsal vertebræ, with corresponding transverse crushing of the cord. The cord, which has been stained by Weigert's method, shows secondary degeneration of certain tracts situated above and below the lesion. The medullated nerve-fibres are stained a deep purple; the grey matter and the areas of degeneration are left yellow.

In the immediate neighbourhood of the constriction, *i.e.*, from the level of the fifth to the seventh dorsal vertebræ, the cord is completely disorganised, the grey matter being indistinguishable from the white, and the axis cylinders being very few in number. There is but little increase in the connective tissue, but there are a large number of inflammatory nuclei in the meshes of the neuroglia and in the subarachnoid spaces.

In the dorsal region, between the third and fourth nerve-roots, are signs of a general inflammatory process spreading from the injury. The posterior median columns are quite devoid of nerve-fibres, and exhibit a large number of inflammatory corpuscles and so-called "amyloid" bodies. The posterior root-zone is very small. In the lateral columns

there is a general and indefinite destruction of the white matter, which is probably inflammatory. The form of the grey matter remains, but there are very few ganglion cells, and they have an abnormally granular appearance.

In the dorsal region, between the second and third roots, the signs of inflammation are less marked. The nerve-fibre destruction in the lateral columns tends to become more circumscribed, occupying the posterior part of the mixed tract. The cerebellar tract is not in its usual position.

In the dorsal region, between the first and second roots, a cavity as large as a pea occupies the position of the right anterior nerve; it is probably the centre of a hæmorrhage which occurred at the time of the accident. The posterior median columns are much sclerosed; there is general destruction of the right half, but, with the exception of a small tract, the left has plenty of nerve-fibres.

In the cervical region, between the seventh and eighth roots, the left half of the cord is somewhat atrophied. The direct cerebellar tract is distinctly degenerated. The grey matter is normal.

In the cervical region, between the third and fourth roots, the degeneration of the posterior median columns is complete. The degenerated area in the mixed tract is, however, quite distinct from the direct cerebellar tract, as the two tracts are separated from each other by a neck of healthy white matter.

In the cervical region at the level of the first roots, the posterior median degeneration is very small, the cerebellar tract is well represented, but the small area of degeneration has disappeared.

In the medulla, near the lower third of the olivary body, a wedge-shaped patch of degeneration is seen a little way behind the grey matter of the olivary body. This patch is the upward continuation of the direct cerebellar tracts.

Below the constriction the cord shows the ordinary descending lesion in the crossed pyramidal tracts. There is no degeneration of the anterior columns.

From a male aged 54, who fell from a scaffold 16 feet high on his back across a wall. He was sensible on admission, but had total loss of sensation and power in the lower extremities, and in the trunk to the level of the sixth ribs. Breathing was quite diaphragmatic. Great pain in the upper part of back and chest. No knee-jerk, ankle-clonus, cremasteric, or abdominal reflex could be elicited on admission, but the epigastric reflex was present on the right side. Two months after admission it was noted that on pinching the lower part of the thigh the ham-string muscles contracted; but there was no sole-reflex. The state of the deep reflexes was unfortunately not noted at this time. There was complete atony of bladder and rectum. Six weeks after admission extensive bed-sores appeared, which, however, were rapidly healing before death. The patient developed hectic temperature, sank, and died January 30, 1885. He had lived twenty weeks and four days after the injury.

At the post-mortem examination, the brain and thoracic and abdominal viscera were natural, except the kidneys, of which the pelves were dilated with purulent urine; numerous small abscesses were scattered throughout the cortex and pyramids. Through the middle of the bodies of the fifth and six dorsal vertebrae had been fractures now firmly united. There was some deviation of the column at this point, the fractured



bodies being twisted on their long axes. The spinous processes had been driven inwards, and formed an angle, narrowing the canal, but not to such an extent as to compress the cord closely. The spines were fixed by callus, and there was some thickening of the dura mater. The membranes were not torn.

*Condition of the cord.*—Opposite the fifth dorsal vertebra the cord was markedly constricted; in fact, it had the appearance of having been cut across without injury to the membranes, in the same way as the middle and internal coats of an artery are cut by the ligature. This must have been done by the dislocation of one of the fragments of the fractured vertebrae, the dislocation probably being reduced by the moving of the patient. In the region of the injury above and below, the cord is very soft, probably owing to myelitis spreading from the lesion. No ascending or descending changes could be seen by the naked eye.

For further details, see *St. Bartholomew's Hospital Reports*, vol. xxi. p. 137.

**107g.** A Series of Sections from a case of Fracture of the Vertebra Prominens and Compression of the Cord. They show ascending and descending degenerations. The sections are taken from the same case as the preceding specimens, and they are arranged in such a manner on a single slide as to afford a key to the previous series.

**107h.** A Series of Sections of the Spinal Cord of a patient who had Locomotor Ataxy. The sections are taken from different parts of the cord, and are so arranged as to show at a glance the alterations in structure which have occurred at various heights. Weigert's method of staining has been employed.

**107i.** A Series of Sections taken through a Spinal Cord in which a tumour involved the lower third of the dorsal region. Secondary deposits occur in the grey matter of the upper dorsal region, and there are ascending degenerations. These sections are also prepared by Weigert's method of staining.

[Presented, together with Nos. 107f, g, h, by H. H. Tooth, Esq., M.D.]

**107k.** Section of a Spinal Cord, from a case of old-standing poliomyelitis. The section is taken from the cervical region.

**107l.** Section of the Dorsal Cord, from the same case of poliomyelitis as the preceding.

**107m.** Section of the Lumbar Cord, from the same case as the preceding.

The three preceding sections were presented by E. Wynne, Esq.

#### PREPARATIONS SHOWING THE CHANGES WHICH TAKE PLACE IN NERVES AFTER SECTION.

**109c.** Sections taken from the Upper Bulbous Extremity of a Nerve which had been divided seven months previously. Young nerve-fibres are seen in the perineurium, whilst the old nerve-fibres have undergone a considerable diminution in size.

- 109d.** Sections of the Nerves of the Axillary Plexus, from a case in which amputation of the fore-arm had been performed fifteen years previously. Some of the fibres are much degenerated, and there is an increase in the amount of connective tissue.
- 109e.** Sections from the Lower End of an Ulnar Nerve, which had been divided fourteen days previously. The specimens are stained with osmic acid, and show the breaking up of the myelin or white substance of Schwann.
- 109f.** Sections taken from the Distal End of an Ulnar Nerve twenty-one days after section. The preparations are stained in the same manner as in 109e, and show identical changes.
- 109g.** Sections through the Distal End of a Median Nerve thirty-five days after division. The specimens are stained in osmic acid and aniline blue. They show that the myelin is almost entirely absent, and that the axis cylinders are destroyed.
- 109h.** Sections through the Lower End of a Nerve seven months after its division. The nerve is in a condition of complete degeneration, the nerve-bundles being replaced by nucleated connective tissue, which does not fully occupy the sheaths.
- 109i.** Sections through the Distal Extremity of a Nerve nine months after section. Young nerve-fibres in the form of fibrils occupy the old nerve-sheaths, but there is no white substance of Schwann (myelin sheath).
- 109j.** Sections through the Distal End of an Ulnar Nerve two years after division. The young nerve-fibres are now surrounded by small myelin sheaths. The preparation is stained in osmic acid and picrocarmin.
- 109k.** Sections through the Distal End of a Median Nerve two years after division. The preparations show the same changes and are stained in the same manner as the preceding.

The nine preceding specimens were prepared and presented by A. A. Bowlby, Esq.

#### **DISEASES OF THE EYE—FIBROUS TUMOUR.**

- 110b.** A Section of a Pure Fibroma removed from the Cornea.

See Series xxxiii. No. 2589a, and Series lvii. No. 390a.

- 113h.** A Section of an Alveolar Melanotic Sarcoma from the sole of the foot. The alveoli as well as the stroma contain cells which are for the most part spindle-shaped, but there are also some round cells and others of irregular form, whilst some are branched. Most of the cells contain granules of pigment, which often obscure the nuclei. In some cases the nuclei are more pigmented than the cell-contents. Besides the pigment contained in the cells, there are masses of free pigment throughout the stroma.

The specimen is preserved in Series l. No. 3318b.

- 113i. Sections through the Skin and Areolar Tissue of a child who was born with a condition resembling sclerema. The surface epithelium is normal, but the muscular layer of the skin is thickened, and the subcutaneous tissues exhibit some cell proliferation. The capsules of the fat-cells are greatly thickened and numerous fat-crystals are present.

See Series xxxv. No. 2700a, and Series lvii. No. 406d.

- 114a. Section of the Skin from the Arm of a Fœtus who was born with a syphilitic eruption. The syphilide superficially resembled pemphigus.

- 117a. Hairs affected with the *Trichophyton Tonsurans* or the parasite causing tinea tonsurans. The hairs are in many cases broken off short, whilst the shaft is crowded with the mycelia of the fungus; in many of the detached scales lying in the neighbourhood of the hairs groups of spores are to be seen as small highly refracting bodies.

- 117b. Specimens of *Leptothrix Buccalis*.

[Presented by D'Arcy Power, Esq.]

- 117c. Specimens of *Sarcinæ Ventriculi*.

- 118a. Echinococci from an Hydatid Cyst of the Liver.

- 122b. Sections of a Dermoid Cyst of the Testis. The lining wall of the cyst is seen to be composed of a corium and epidermis. The corium consists of dense embryonic connective tissue with fat, and contains a large number of hair-follicles, each containing a non-medullated hair with its proper complement of sebaceous glands.

From Series xxxvi. No. 2810a.

- 127d. A Section of a Dermoid Cyst of the Ovary.

- 130q. A Section taken from the Anterior Lip of a Cervix Uteri which had undergone hypertrophy. It consists of a sarcoma undergoing myxomatous degeneration, and containing minute masses of hyaline cartilage, which are not always separated from the surrounding tissue.

From Series xliii. No. 3015c.

- 133d. A Section of the *Carunculæ Myrtiformes*, from a case of vaginitis. The surface is beset with numerous papillæ covered with stratified epithelium.

- 134a. A Section of a Proliferous Growth, from the interior of a cyst of the mammary gland. The growth has the characters of a duct-papilloma.

- 142e. A Section of a Fibro-Adenoma of the Breast, which in one place presents a cyst formed by the dilation of a duct. In the cyst is a papillary growth, which springs from the epithelium lining the duct—duct-papilloma.

- 146f. A Section of a Fibro-Sarcoma of the Breast. Numerous cysts may be seen lined with glandular epithelium, and embedded in a fibro-sarcomatous matrix.
- 153a. A Section of an Encephaloid Cancer of the Breast which is undergoing colloid degeneration.
- 162c. A Section of a typical Myxoma from the Parotid Gland. Cf. 82b.
- 163g. A Section of a typical large Round-Celled Sarcoma, removed from the scapula.
- 163h. A Section of a Spindle-Celled Sarcoma which is undergoing extensive fibrous change.
- 169b. A Section of a typical Fibro-Adenoma of the Breast. Cf. Nos. 139-142.
- 170a. A Section of a Papilloma which grew at the margin of the anus.
- 171d. A Section of a Rodent Ulcer from the Pinna of the Ear.
- 171e. A Section of a Rodent Ulcer which involved the Skin of the Nose. It shows extremely well the manner in which the new growth has infiltrated the deeper portions of the skin, and extends as high as the epithelium.
- 172b. A Section of a typical Epithelioma which is invading the dorsum of the tongue.
- 172c. A Section through a typical Epithelioma of the Thigh. The section is taken through the ulcer and the adjacent skin.
- Nos. 127a, 134d, 146f-163g, 169b, 170a, 172c, were presented by A. A. Bowlby, Esq.'

#### **ENCEPHALOID CARCINOMA.**

- 176d. A Section of a typical Encephaloid Carcinoma.
- 177a. Section through a Cavernous Angioma.

#### **SYPHILIS.**

- 178c. A Section of a Hunterian Chancre, from a patient who had the symptoms of secondary syphilis at the time of its removal.
191. Crystals of Oxalate of Lime, which have assumed the dumb-bell shape.
192. Crystals of Urea.
193. Crystals of Nitrate of Urea.
194. Crystals of Leucin.



## 195. Crystals of Tyrosin.

Presented with the preceding by H. Lewis Jones, Esq., M.D.

## 196. Crystals of Creatin.

## 197. Crystals of Creatinin.

## 198. Spermatozoa from the human subject.

## 199. Pus Corpuscles.

## SERIES LVI.

## CASTS AND MODELS OF DISEASED OR INJURED PARTS.

- 31b. Cast of a Pott's Fracture taken four months after the injury. The foot is shifted outwards, but without eversion, and is at the same time displaced backwards, thereby making the inner malleolus appear prominent, whilst the external malleolus is less prominent than on the right side.

See *Male Surgical Register*, vol. i. (1887), No. 754

- 35c. Cast of the Right Leg of a man whose foot had been amputated by Chopart's operation seventeen months previously.

See *Male Surgical Register*, vol. iii. (1884), No. 2715.

- 35d. Cast of the Left Leg, showing the stump formed after Pirogoff's amputation through the ankle.

See *Female Surgical Register*, vol. iii. (1886), No. 2435\*.

- 55a. Cast of the Left Leg and Foot of a patient who had an unusual form of tubercular syphilide on the right leg. The foot, as a result of long-standing syphilitic disease, was dislocated forwards.

See *Female Surgical Register*, vol. iii. (1887), No. 65.

- 67a. Cast of the Arm of a Man, in whom the long head of the biceps had been ruptured at its junction with the upper part of the belly of the muscle. The injury occurred a fortnight before the cast was taken, whilst the patient was lifting a block of stone from a barge to a stage above his head.

See *Male Surgical Register*, vol. iii. (1886), No. 632.

- 68d. Casts of the Hands of a patient who had a contraction of the palmar fascia leading to flexion of the little finger.

- 72c. Cast of the Right Hand of a patient, showing to an extreme degree the clubbing of the distal phalanges. The patient had suffered from an empyema for ten years.

See *Mark Ward Book* for 1886, s. v. M. Matteoni.

- 75c. Cast of the Left Foot, from a case of congenital talipes varus. A wedge-shaped piece of the tarsus was removed, the patient subsequently suffering from gangrene of the toes.

See *Male Surgical Register*, vol. iii. (1887), No. 588.

- 85f. Cast of the Left Foot from a boy aged 3 years, showing an extreme condition of talipes varus, resulting from infantile paralysis. As division of the plantar fascia produced no material effect, a wedge-shaped piece of the tarsus was removed, and the bones of the foot were pegged together.

See *Male Surgical Register*, vol. iii. (1887), No. 3254\*.

- 85g. Cast of the Right Foot, from a case of talipes equinus.

See *Male Surgical Register*, vol. iii. (1887), No. 427.

- 94b. Casts of the Feet of a patient who had pes cavus of both feet. The plantar fascia was divided, and subsequently the tendo Achillis in each foot.

See *Male Surgical Register*, vol. iii. (1886), No. 1364.

- 93b. A Series of Nine Casts, illustrating through a period of two years the growth of an aneurysm of the first and second parts of the arch of the aorta, which eventually caused death by rupturing externally.

From a man aged 38, who had syphilis fifteen years previously. On admission, he had a prominent swelling extending along the sternal end of the clavicle to the cartilage of the fourth rib, with the left border of the sternum as an axis. In the swelling was well-marked expansile pulsation. The pulse was equal in both wrists; the pupils were equal. The aneurysm gradually pointed, the first drop of blood oozing out four weeks before his death. The casts were made by the patient himself.

The specimen is preserved in Series viii.

See *John Ward Book*, 1887, Case xi.

- 105a. Cast of a Lower Jaw, with an interdental splint *in situ*, to show Hammond's method of treatment of fracture of the inferior maxilla.

Presented by H. G. Read, Esq.

- 117a. Cast of an unusually large Salivary Calculus.

The original is preserved in Series liii. No. 245a.

- 137a. Cast of an Interstitial Hernia.

A drawing is preserved in Series lvii. No. 260m.

- 149b. Cast of the Left Hand of a patient who suffered from lepra anæsthetica. The terminal phalanges of the first and second fingers are rigidly flexed; the third and fourth fingers are flexed at the second phalangeal joints.

- 149c. Casts of the Feet of the same patient. The left hallux has undergone spontaneous amputation.

See *Matthew Ward Book* for 1886, No. 39.

## SERIES LVII.

## DRAWINGS OF DISEASED OR INJURED PARTS.

- 39c. Drawing of a Knee-Joint from a case of suppurating osteo-arthritis. (T. Godart.)

From a patient aged 40, who had disease of her right knee-joint for twenty years. See *Female Surgical Register*, vol. i. (1886), No. 1921, and vol. i. (1887), No. xi.

- 40b. Drawing of the Knee-Joint from a case of Tubercular Synovitis. The synovial membrane is seen to be very greatly thickened and the cartilages are ulcerated. Microscopic examination of the synovial membrane showed the presence of tubercular deposits, but no tubercle bacillus could be detected. (T. Godart.)

From a lady aged 67, who on October 10 had a sudden attack of pain in the knee, followed by an effusion, which, on account of the subsequent ecchymosis over the joint, was supposed to have been of blood. The symptoms of chronic arthritis subsequently set in, and the limb was removed on March 10 in the following year. Two months before amputation the joint was tapped, and clear synovial fluid was removed. During the whole period of the joint-disease the patient got up daily, and absolutely refused to wear any splint.

The joint is preserved in Series ii. No. 569b.

Presented by Thomas Smith, Esq.

- 45v and w. Drawings of the Right Knee-Joint from a case in which an inter-muscular cyst extended deeply into the popliteal space. (T. Godart.) (Cf. Nos. 45 and 45b-e.)

The specimen is preserved in Series vi. No. 1205f.

- 45x. Drawing of the Left Leg from a case in which a large inter-muscular synovial cyst opened into the knee-joint. The shrivelled remains of an old cyst runs along the inner border of the gastrocnemius muscle. (T. Godart.)

The specimen is preserved in Series vi. No. 1205e, and this drawing is reproduced in the *Transactions of the Pathological Society*, vol. xxxviii. pl. xxiii. fig. 2.

- 46a. Two Drawings of the Head of a Child with a compound depressed fracture of the left parietal bone. The drawings show the gradual increase in size of a hernia cerebri; they were made at an interval of a month. (T. Godart.)

See *Male Surgical Register*, vol. i. (1887), No. 3378\*.

- 57a. Two Photographs of a Boy who had congenital displacement of his left hip. Several other members of the same family had a similar abnormality.

**96a.** Drawing of a Heart from a case of Ulcerative Endocarditis, in which the patient had numerous embolic aneurysms. (T. Godart.)

The heart is preserved in Series vii. No. 1299b; the arteries in Series viii. Nos. 1460 b, c, d. See also *Transactions of the Royal Medico-Chirurgical Society*, vol. lxx. p. 117, where the heart is figured. Cf. 108 a, b, c, d, e, and f.

**100a.** Drawing of the Right Ventricle of a Heart. There is great dilatation of the right ventricle without much hypertrophy, a great increase in the calibre of the pulmonary artery, and an absence of one pulmonary valve, with the commencement of an aneurysm in the place where it should have been. (T. Godart.)

From a man aged 49, who was admitted with chronic bronchitis, emphysema, and gout. He had a diastolic heart-murmur, heard at the apex and conducted downwards. See *John Ward Book* for 1887, No. 15.

The specimen is preserved in Series vii. No. 1316a.

**101a.** Drawing of a Child with Measles. The patient was deeply cyanosed, as a result of a congenital malformation of the heart, whereby the aorta communicated with both ventricles. The fingers were markedly clubbed. (T. Godart.)

The heart is preserved in Series iv. Class v. No. 3601a.

**108a.** Drawing of the Abdominal Aorta with the common Iliac Arteries from a case of multiple embolic aneurysms. (T. Godart.)

**108b.** Drawing of Portions of the Brachial, Radial, and Ulnar Arteries, from the same case as the preceding, showing a large aneurysmal sac in communication with the brachial artery. There are calcareous emboli in both the radial and ulnar arteries. (T. Godart.)

**108c.** Drawing of the Posterior Tibial Artery, from the same case as the preceding. The artery opens into a large false aneurysm of the calf. (T. Godart.)

**108d.** Front View of the False Aneurysm shown in the preceding drawing. (T. Godart.)

**108e.** Drawing of the Microscopical appearances presented by a Section of the Common Iliac Artery, from the same case of multiple embolic aneurysms. The section is taken at the seat of embolism, and shows that the internal coat has been destroyed, and that the other coats of the vessel are infiltrated with cells, whilst portions of a calcareous embolus are still visible. (T. Godart.)

**108f.** Drawing of a Section of a Plugged Anterior Cerebral Artery, from the same case as the preceding. The destruction of the arterial wall in the neighbourhood of the calcareous embolus is well shown. (T. Godart.)

The specimens are preserved in Series viii. Nos. 1460 b, c, d. Cf. No. 96a. See also *Transactions of the Royal Medico-Chirurgical Society*, vol. lxx. p. 117.



- 114b. Drawing of the Tongue and Tonsils from a patient in whom the tonsils had become gangrenous. Numerous micrococci were found upon making a careful microscopical examination of the dead tissue. (T. Godart.)

From a boy aged 19, who had only been ill a week. He suffered from epistaxis and hæmoptysis, but had made no complaint of sore throat.

See *John Ward Book* for 1887, No. 72.

- 114c. Drawing of the Tongue and Tonsils, with the Larynx, Trachea, and Lungs, from a case of diphtheria with gangrene of the tonsils and numerous hæmorrhages into the lungs. (T. Godart.)

See *Medical Post-Mortem Book*, vol. xiv. p. 24.

- 176a. Drawing of the Head of a Child who had Molluscum contagiosum. (L. Mark, Esq.)

- 177b. Drawing of a Case of Unilateral Atrophy of the Tongue. (T. Godart.)

From a man aged 30, who had rheumatic fever seven years and syphilis four years before admission to the Hospital. Three months before admission sores were noticed on the right ankle, and one month later he had a sore throat and a headache, which he referred to the frontal and occipital regions. The headache was accompanied by occasional vomiting. About a month after the onset of the headache the tongue was first protruded to the right side, and loss of power in the left arm and leg was noticed, with slight dimness of sight. On admission, his walk was feeble and the grasp of the left hand was impaired; the tongue was protruded to the right, and on the right side of it great loss of substance with a flabby consistency was manifest. The neck was stiff, and the head was rotated with difficulty. The temperature maintained a slightly hectic character. Electrical examination revealed complete loss of faradic excitability on the right side of the tongue with impaired sensation, whilst the muscles of the left thumb supplied by the median nerve did not readily react.

See *Luke Ward Book* for 1885, No. 481.

- 178d. Drawing of the Tongue of a Child aged  $3\frac{1}{2}$  years, showing a small recurrent papillary growth. (T. Godart.)

The tumour was first noticed when the child was 3 months old. It was removed at 11 months, and immediately grew again. It was removed a second time a year after the first operation, and again recurred.

See *Male Surgical Register*, vol. v. (1886), No. 2831.

- 178e. Drawing of a Tumour on the right side of the under-surface of the Tongue of a man aged 30. It was doubtful whether the tumour was syphilitic or tubercular. It had been observed for nine months. (T. Godart.)

See *Male Surgical Register*, vol. v. (1887), No. 768.

- 178f. A Drawing of a Tongue, from a case of congenital syphilis occurring in a boy aged 7 years. (T. Godart.)

See *Male Surgical Register*, vol. ii. (1887), No. 1187.

- 180b. Drawing of a large Epithelioma of the Tongue. The increase in the size of the organ was so great that the patient was unable to retract it into his mouth. (T. Godart.)

See *Male Surgical Register*, vol. iii. (1886), No. 3094.

- 187b.** Drawing of a Congenital Pedunculated Tumour which grew from the anterior portion of the left lateral margin of the tongue. Microscopical examination of the tumour after its removal showed that it was a soft fibroma. (T. Godart.)

The tumour is preserved in Series xii. No. 1785b ; a section is preserved in Series lv. No. 76d.

See *Female Surgical Register*, vol. i. No. 1122.

- 260j.** Drawing of a Congenital Umbilical Hernia with the Intestines *in situ*. The small cyst situated immediately below the sac was filled with a viscid substance. (T. Godart.)

From a sketch made immediately after the birth of the child by J. J. de Z. Marshall, Esq.

The sac of the hernia, with the cord, is preserved in Series xx. No. 2156a.

- 260k.** Drawing of a Child aged one week, who was brought as an outpatient to the Hospital with an umbilical hernia, the sac of which had sloughed. (T. Godart.)

- 260a.** Drawing of a Case of Ventral Hernia, which occurred in the right hypochondriac region of a child. The drawing shows the situation of the swelling. (T. Godart.)

- 260m.** A Drawing of a Case of Interstitial Hernia of the Right Side, from a man aged 30, in whom it was congenital. The hernia could be returned into the abdominal cavity, and was retained by the use of a properly adjusted truss. The right half of the scrotum was undeveloped, and the right testis occupied the inguinal canal. (T. Godart.)

A cast is preserved in Series lvi. No. 137a.

- 288b.** Drawing of the Right Hand of a Child, in which, as a result of lymphatic obstruction, the fingers have assumed an abnormal appearance. (L. Mark, Esq.)

See *Female Surgical Register*, vol. iv. (1887), No. 1868.

## A COLLECTION OF PHOTOGRAPHS OF VARIOUS DISEASES OF THE THYROID GLAND.

The following collection, consisting of forty-five photographs of goitre and allied affections of the thyroid gland, was presented by James Berry, Esq. It illustrates the various points in his essay upon diseases of the thyroid gland, to which the Jacksonian Prize was awarded by the Council of the Royal College of Surgeons in 1887.

- 298d.** A Photograph of the Heart, Lungs, Thyroid and Thymus Gland at birth. The specimen shows the relative size of the different organs.

From the Anatomical and Physiological Series, xviii. No. 780, the

- 298e. A Photograph of a Case of Non-Goitrous Cretinism, the worst form of this disease.

A native of Steeple Aston, in Wiltshire, where she had always lived. The patient was 25 years of age, but was less intelligent than most children of three. The thyroid gland was atrophied. The mother has a goitre. Death occurred a year after the photograph had been taken.

- 298f. A Photograph of a Case of Cretinism of a less severe form than the preceding. In this case there is less swelling and there was more intelligence. The boy was 8 years of age.

See *Rahere Ward Book* for 1887.

- 298g. Photograph from a Case of Myxœdema. A swelling similar to the so-called "fatty tumour" of cretinism is seen in the right supra-clavicular region.

The photograph is that of a middle-aged woman seen at Leytonstone; it was taken shortly before her death.

- 298h. Photograph of an Atrophied Thyroid Gland. The specimen consists of the larynx, part of the trachea, and thyroid gland, from a woman aged 53, who died of myxœdema in the Holborn Infirmary in May 1886.

The original specimen is preserved in the Hunterian Museum, No. 2906c.

- 298i. Photograph of a Goitrous Cretin aged 25. (Cf. Nos. 610 and 611.)

See *Elizabeth Ward Book* for 1886, s. v. E. L. Balls, and *Female Surgical Register*, vol. iv. (1886), No. 559.

- 298j. Photograph of a Semi-Cretin with a Cysto-parenchymatous Goitre.

From Trowbridge, in Wiltshire; seen 1886.

- 298k. Photograph of a Girl aged 13, who exhibited an early stage of Parenchymatous Goitre. The whole gland is uniformly enlarged.

- 298l. Photograph of a Boy aged 14, who was affected with Parenchymatous Goitre in an early stage. The whole gland is uniformly enlarged.

- 298m. Photograph of the Larynx, Trachea, and Thyroid Gland from a case of Parenchymatous Goitre, showing the manner in which goitre most frequently causes dyspnœa. The trachea is narrowed laterally at a point situated an inch below the cricoid cartilage. The relations to the tumour of the enlarged inferior thyroid arteries are also seen.

From a boy aged 14, who died with dyspnœa produced by the goitre.

The specimen is preserved in Series xxvi. No. 2310a.

ti.

- it in. Photograph of a Case of Exophthalmic Goitre.

See *Hope Ward Book* for 1887.

**298o.** Photograph of a Case of Congenital Goître from a still-born child. The condition of the skin over the tumour is due to post-mortem changes.

From Series xxvi. No. 2319b.

**298p.** Three Photographs from a Man who had a Cysto-parenchymatous Goître. The whole of the thyroid gland is affected, but the left lobe is larger than the right.

See *Mark Ward Book* for 1887.

**298q.** Photograph of a Section of a Cysto-parenchymatous Goître, showing the internal structure. All the vesicles of the gland are dilated, most of them are full of a dark brown colloid substance, but some contain white calcareous material.

The specimen is preserved in the Hunterian Museum, No. 2902c.

**298r.** Photograph of a Man with a Cysto-adenoma of the Thyroid, which chiefly affected the isthmus and left lobe of the gland.

Case of Jean Jungo, aged about 35, a native of Besançon, seen at the Hôpital des Bourgeois, Fribourg, Switzerland, in August 1886.

**298s.** Photograph of a Case of Cysto-adenoma, from the sister of the man from whom 298r was taken.

Seen at the Hôpital des Bourgeois, Fribourg, Switzerland, August 1886.

**298t.** Photograph of a Woman who had a small Cysto-adenoma in the Right Lobe of the Thyroid Gland, which is otherwise nearly normal. This patient subsequently died of ovarian disease. The tumour was found to have the usual structure of a cysto-adenoma, and to possess a well-defined capsule.

The thyroid gland is preserved in Series xxvi. No. 2310b.

See *Mark Ward Book* for 1887.

**298u.** Photograph of a Man who had a Solid Tumour of the Left Lobe of the Thyroid Gland. The growth was probably a cysto-adenoma. The anterior jugular vein, as is commonly the case, is seen to be greatly distended.

Case of Mr. K., seen at Llanelly, Glamorganshire, in April 1886.

**298v.** Photograph of a Case of Cysto-adenoma which was removed from the Left Lobe of the Thyroid Gland of a young man by Dr. Paul Niehans at the Insel Hospital, Berne, on August 11, 1886. The tumour, which has been split open from the front, is chiefly composed of fibrous tissue. It contains a cyst as large as a walnut, which is definitely encapsuled, its interior being smooth, white, and glistening.

The original specimen is preserved in the Hunterian Museum, No. 2907b.

**298w.** Photograph of a Case of a Cysto-adenoma with numerous intracystic growths, which was removed from a middle-aged woman in the



Insel Hospital, Berne, August 11, 1886, by Dr. Girard. The tumour has a definite capsule. It has been laid open from the front to show its internal structure. A glass rod is introduced through one of the channels which connect the cysts.

[The original specimen is preserved in the Hunterian Museum, No. 2904a.]

**298x.** Photograph of a Woman who had a large Cystic Goître, which had existed for many years without causing inconvenience. The superficial veins are greatly distended over the swelling.

From an old woman seen at Youlgreave, Derbyshire, in August 1887.

**298y.** Photograph of an Old Woman who had an unusually prominent Cystic Goître. The tumour was of many years' duration and caused no trouble.

From an aged woman seen at Hôpital des Bourgeois, Fribourg, Switzerland.

**298z.** Two Photographs of a Man who had a very large Cystic Goître. The tumour had existed between fifty and sixty years, but during the last ten years it had greatly increased in size, causing dyspnœa and dysphagia. The trachea was much displaced to the left. The superficial veins are dilated.

Case of Michel Ebischer, aged 70, who was seen at Wölperswyl, Canton Fribourg, Switzerland, in August 1886.

**298aa.** Photograph of a Woman who had a Cyst or Cysto-adenoma affecting the right lobe of the thyroid gland.

From an out-patient seen at St. Bartholomew's Hospital in 1886.

**298bb.** A Photograph of a Case similar to the preceding.

From a patient seen at Llanelly, Glamorganshire, April 1886.

**298cc.** A Photograph of a Case similar to the two preceding.

From a patient seen at Llanelly, Glamorganshire, in April 1886.

**298dd.** A Photograph of a Case which is similar to the three preceding.

From a patient seen at Llanelly in April 1886.

**298ee.** A Photograph of a Patient who had a Cyst or Cysto-adenoma of the thyroid gland, similar to those seen in the four preceding cases.

From a patient seen at Llanelly in April 1886.

**298ff.** Photograph of the Larynx, Trachea, and neighbouring parts, showing a cyst in the right lobe of the thyroid gland. The cyst had existed for thirty years, and had displaced the trachea, which was considerably flattened. There was no dyspnœa.

From C. K., aged 49, who died in the City of London Hospital for Diseases of the Chest, Victoria Park, during the year 1886.

The original specimen, with a cast of the interior of the larynx and trachea, is preserved in the Hunterian Museum, Nos. 2902 c and d.

**298gg.** Two Photographs of a Man who had a Cystic Tumour of the right lobe of the thyroid gland, removed by operation. (Before the operation.)

See *Male Surgical Register*, vol. i. (1886), No. 2948.

The tumour with the trachea is preserved in Series xxvi.

**298hh.** Photograph of a Remarkable Cyst of the Thyroid Gland, which was removed by operation. The cyst has been cut open, and is lying with its contents in a heap at the bottom of a basin. The interior of the cyst was completely filled with rounded crenate bodies, which were chiefly composed of solidified colloid material. These bodies were all free; they were not attached either to each other or to the cyst-wall.

The greater part of the specimen is in the Pathological Museum at Geneva, but a small portion is preserved in the Hunterian Museum, No. 2905b.

The case is reported in the *Journal de la Suisse Romande*, 1883, Mme. K.

**298ii.** Photograph of a Woman with a Cyst or Cysto-adenoma of the left lobe of the thyroid gland.

**298jj.** Two Photographs of a Woman who had Tumours of the Cranium, which were probably sarcomatous. The patient is the one from whom the preceding photograph was taken.

See *Sitwell Ward Book* for 1887.

**298kk.** Three Photographs of a Man who had a Goitre which had existed for many years. During the five months preceding the period at which the photograph was taken, the tumour had considerably increased in size, especially upon the right side, and it appeared to be the seat of malignant disease. There is a narrowing of the palpebral fissure with contraction of the pupil, due to pressure upon the sympathetic nerve in the neck.

The patient presented himself as an out-patient at St. Bartholomew's Hospital.

**298ll.** Photograph of a Man who had Malignant Disease of the Thyroid Gland, attacking an innocent goitre which had existed for many years. The patient eventually died slowly of suffocation.

See *Male Surgical Register*, vol. ii. (1886), No. 3660.

**298mm.** Photograph of a Case of Malignant Disease of the Thyroid Gland.

**298nn.** Photograph of a Larynx, Trachea, &c., with malignant disease of the thyroid gland. A vertical section has been made to show the manner in which the new growth infiltrates and becomes adherent to the trachea.

The specimen is preserved in the Hunterian Museum, No. 2908b.

**298oo.** Photograph of a Man in whom a Cystic Goitre had been tapped and injected some years previously. A permanent fistula remains.

See *Colston Ward Book* for 1887.

- 298pp. Two Photographs of a Girl with a Parenchymatous Goitre, taken several weeks after division of the thyroid isthmus and the performance of tracheotomy. The goitre, which almost entirely disappeared a few days after the operation, returned to its former size.

See *Female Surgical Register*, vol. iv. (1886), No. 2796\*.

- 298qq. Two Photographs of a Patient who had a large Unilocular Cyst of the Thyroid Gland, which was removed by Dr. Comte at the Canton Hospital, Geneva, on July 30, 1886. The cyst-wall was partially calcified; the contents were solid, and consisted of a mixture of blood-clot and colloid material, which had in part undergone calcification.

The photographs show the patient as he appeared before and after the operation.

The greater part of the tumour is in the Pathological Museum at Geneva, but small portions of it are preserved in glycerine jelly in Series xxvi. No. 2314f.

- 298rr. Photograph of a Patient in whom a Goitre had been removed three weeks previously from the right side of the neck. The oblique line of incision can be seen, and the wound is not quite healed at its lower end. A large hollow on the right side of the neck shows the place where the tumour was situated. The larynx and trachea are still displaced, and form a curve the convexity of which is to the left.

Case of M. Demmelayr, seen at Geneva in July 1886.

- 298ss. Photograph of a Woman six months after the removal of all the parts of a Goitre except the isthmus. The two lobes of the gland were removed at separate operations, with an interval of several months between them. The general health of the patient when seen was excellent, and there were no signs of cachexia strumipriva. The isthmus of the thyroid, as is seen in the photograph, was greatly hypertrophied.

The patient was seen at the Radcliffe Infirmary, Oxford, in May 1886.

- 298tt. Photograph of a Woman with Cachexia Strumipriva (myxœdème opératoire of Reverdin), taken five years after the complete extirpation of the thyroid gland. There was great anæmia, but there is no abnormal swelling. Both the recurrent laryngeal nerves have probably been divided.

Case of Pauline Crottaz, one of the five cases from which this disease was first described. See *Journal de la Suisse Romande*, 1883.

Seen at Geneva in August 1886.

- 298uu. Photograph of a Woman with Cachexia Strumipriva, taken eleven years after the complete removal of a goitrous thyroid gland. This patient in many respects resembles the one from whom the preceding photograph was taken.

For a full account of this case see the *Lancet*, vol. ii. (1886), p. 65.

- 298vv. Photograph of Patient in the last stage of Cachexia Strumipriva, which eventually proved fatal. A goitrous thyroid gland had been entirely removed four years previously, the left half being extir-

pated on January 7, 1882, and the right half on November 27, 1882, by Professor Kocher of Berne. The condition of the patient on August 7, 1886, is described as being one of complete imbecility, with much swelling of the head and great emaciation of all the other parts of the body.

Seen in the Insel Hospital at Berne.

305bbi. Drawing of the Face of a Man, to show the deep bronzing of the skin which occurs in Addison's disease. The drawing was made three years after those of the knee and arm, which are preserved in the collection, but there is little or no alteration in the tint. (T. Godart.)

306a. Drawings of a Kidney in a Condition of acute Interstitial Nephritis. (T. Godart.)

Sections are preserved in Series lv. No. 93g.

307a. Drawing of a Kidney from a Case of Chronic Parenchymatous Nephritis. The kidney is large and pale, somewhat granular upon its surface, and with an adherent capsule. The cortex is pale and mottled, whilst the pyramids are of a bright pink colour. (T. Godart.)

See *Post-Mortem Register*, vol. xiii. p. 143.

315a. Drawing of a Kidney from a Case of Chronic Interstitial Nephritis. The kidney is very small, and its surface was highly granular, whilst the cortex was extremely narrow, and contained a few small cysts. (T. Godart.)

322b. A Drawing of a Kidney, in which, as a result of tubercular disease, nearly the whole kidney substance has been absorbed, its place being taken by masses of caseating material. The other kidney was healthy. (T. Godart.)

See *Surgical Post-Mortem Book* for 1887, p. 67.

331b. Drawing of the Kidneys and Bladder, from a case in which numerous pedunculated tumours grew from the bladder of a child. (L. Mark, Esq.)

The bladder is preserved in Series xxix.

390a. Drawing of the Face of a Girl aged 5, showing a fibrous tumour which occupied four-sixths of the anterior surface of the left cornea, whilst a similar but smaller growth sprang from the inferior margin of the right cornea. (T. Godart.)

†The left eye, with the fibrous tumour *in situ*, is preserved in Series xxxiii. No.

2589a. Sections are preserved in Series lv. No. 110b.

392b. Drawing of a Malignant Growth springing from the eye of a woman aged 69. The eye had protruded for two months. (L. Mark, Esq.)

The eye is preserved in Series xxiii.

See *Ophthalmic Ward Book* for 1887, No. 1597.



- 395g. A Drawing of the Right Eye of a Boy aged 16, in whom the lens had been dislocated into the anterior chamber. After removal the lens was found to be calcareous. (T. Godart.)

The patient stated that he had always been blind with his right eye, but it was only three days before his admission that a round yellow object had appeared in the anterior chamber, and at the same time his eye became painful.

The lens itself is preserved in Series xxxiii. No. 2640a. See *Ophthalmic Ward Book* for 1886, No. 3090.

- 406d. Drawing of the Posterior Aspect of a Child, whose buttock was affected with a condition allied to sclerema. (T. Godart.)

A section of the skin of the buttock is preserved in Series xxxv. No. 2700a, and a microscopical section in Series lv. No. 1131.

- 407d. Photograph of a Young Woman who had a hairy mole growing above the left eyebrow. (Cf. vol. ii. Series xxxviii. No. 21.)

See *Female Surgical Register*, vol. v. (1885), No. 2419.

- 420a. Drawing of a Hand showing psoriasis guttata with two tophi in the extensor tendon of the middle finger. (L. Mark, Esq.)

From a woman aged 55, who had carcinoma hepatis with gouty cachexia. See *Elizabeth Ward Book* for 1886, s. v. Sophia Hunt.

- 422a. Drawing of the Lower Portion of the Body of a Child aged 2 years, the subject of urticaria pigmentosa. (T. Godart.)

See *Male Surgical Register*, vol. v. (1886), s. v. Wm. Murphy.

- 431d. Drawing of the Back of a Man, showing the appearance of pemphigus hæmorrhagicus. (T. Godart.)

From a man aged 42, a meal-carrier, who had repeatedly suffered from blood-poisoning.

See *Matthew Ward Book* for 1886.

- 435a. Drawing of the Face of a Patient with a large spreading Ulcer affecting the inner corner of the eyelids, with the left side of the nose and cheek. The ulcer had many of the characters of a primary syphilitic sore. It healed under the influence of black-wash and mercury administered internally. (T. Godart.)

See *Ophthalmic Ward Book* for 1886, No. 1964.

- 445b. Drawing of the Face of a Man aged 24, covered with a Rash which resulted from the administration of iodide of potassium. (L. Mark, Esq.)

The patient had been treated for ten days with iodide of potassium.

See *Male Surgical Register*, vol. ii. (1887), No. 2766.

- 446a. A Pustular Eruption occurring on the Leg of a Male Child aged 3 years, who had always been healthy. A similar but smaller eruption appeared on the face. It has many of the appearances of the rash produced by bromide of potash. (T. Godart.)

**451a.** A Drawing of the Lips and Tongue of a Man aged 21. There is a pustular herpetic eruption upon the lower lip, which is very much thickened, but was not indurated. At both oral angles and upon the left lateral half of the lower lip are abundant closely-set pustulating herpetic vesicles, and over the rest of the lower lip are large pustulating bullæ and sordes. On the upper lip is discrete pustulating herpes. On the left lateral half of the tongue anteriorly are small herpetic pustules, which appear similar to, but are smaller than those on the lips. (T. Godart.)

The man was a carman, who had four horses to groom. Of these, two had been laid up with "greasy heel." The fluid obtained from the vesicles was examined microscopically, but no micro-organisms were found.

**459a.** Drawing of the Leg of a Patient aged 50, who had scorbutus of twelve months' standing. The limb is affected with a purpuric eruption, which resembles psoriasis with subcutaneous hæmorrhage. (T. Godart.)

See *Elizabeth Ward Book* for 1887, s. v. S. Nichols.

#### GOUT.

**463a.** Drawing of a Gouty Ulcer occurring over the inner side of the left tibia. Numerous granules of urate of soda are seen upon its surface. (T. Godart.)

From a woman who had numerous manifestations of gout in other parts of her body.

See *Female Surgical Register*, vol. iv. (1887), No. 543.

**463b.** Drawings of the Ear and External Genital Organs of a Man aged 58, who had numerous tophi distributed over his body. (L. Mark, Esq.)

See *Luke Ward Book* for 1887, s. v. John Luck.

**465ea.** Drawing of the Face of a Woman who had been affected with tubercular lupus for six years. (A. Head.)

See *Female Surgical Register*, vol. v. (1887), No. 1243.

**477g.** Drawing of a Rodent Ulcer, involving the right cheek of a man aged 48. The ulceration was of eight years' duration. (T. Godart.)

See *Male Surgical Register*, vol. v. (1886), No. 1393.

**477h.** Drawing of a Rodent Ulcer, invading the inferior maxillary bone. The growth was excised and the bone was gouged. (T. Godart.)

See *Female Surgical Register*, vol. iii. (1886), No. 2189.

**501b.** A Drawing of a Tubo-ovarian Cyst. The communication between the tube and the cyst is shown by an opening made from above. The folds at this part are the result of a collapse of the cyst, and are not natural. (T. Godart.)

The specimen is preserved in Series xlii. No. 2934b.

- 501c. Drawing of a Large Bilocular Parovarian Cyst, showing a portion of the elongated distended tube, the orifice of which is everted from the surface of the cyst by the tension of the ovarian fimbriæ.

From Series xliii. No. 2942b.

- 527a. Drawing of the Left Breast of a Patient who had a large carcinomatous growth springing from the gland at some distance from the nipple. The tumour was bilobed and of the size of a foetal head. It was attached to the ribs, and the skin over it was involved, but the nipple was not retracted. The growth was of eight months' duration. It was considered to be too far advanced for operative interference. (T. Godart.)

See *Female Surgical Register*, vol. ii. (1886), No. 1690.

- 531c. Drawing of a Woman in whom both Breasts were infiltrated with Scirrhus, which was undergoing atrophy. The mammæ were greatly diminished in size and were very hard, but the skin was not adherent. The skin over the left breast was much puckered, and the gland was adherent to the underlying structures. There were no enlarged axillary glands. (T. Godart.)

From a woman aged 48, the mother of six children, all of whom she suckled. In March 1886 the abdomen was opened for ovarian disease at another Hospital, but the case was discovered to be one of ascites. At this time there was a suspicion of abdominal cancer, which became a certainty in December 1886, when the patient was found to have a stricture high up in the rectum. Six years ago she first noticed a small swelling in the left breast, but as it gave her no trouble she paid no attention to it.

See *Faith Ward Book* (1886-7), s. v. E. Bish.

- 535a. Drawing of the Arm and Chest of a Man, in whom, as a result of a burn from a paraffin lamp and subsequent tight bandaging, great deformity had occurred. The limb was perfectly useless, and was covered with a thick crust of epidermis, which readily peeled off. The chest was greatly scarred. After staying for two months in the Hospital, the arm was amputated immediately below the neck of the humerus. (T. Godart.)

See *Male Surgical Register*, vol. i. (1887), No. 1405.

- 543g. A Drawing of the Hands of a Child aged 4 years, who suffered from symmetrical gangrene (Raynaud's disease). (T. Godart.)

See *Male Surgical Register*, vol. i. (1887), No. 1325.

- 545g. Drawings of the Hand of a Man who had Cellulitis following upon a poisoned wound of the first finger. He recovered with the loss of the finger, which had to be amputated. (T. Godart.)

See *Male Surgical Register*, vol. v. (1887).

- 564a. Drawing of a Man who had a large Cystic Tumour on the right side of the back of the neck. On making an incision into it, a considerable quantity of fluid mixed with blood-clots escaped. (T. Godart.)

From a man aged 45, who had noticed a swelling in his neck for three years. It was at first the size of a marble, and two drachms of a viscid fluid were obtained on

tapping it. The tumour was repeatedly incised, and ultimately it increased rapidly, and the skin over it ulcerated.

See *Male Surgical Register*, vol. iv. (1887), No. 1085.

- 572a. Drawing of a Patient with a Melanotic Wart on the left side of his Nose. The wart was first noticed six years before admission. It was said to be slowly growing. (T. Godart.)

See *Male Surgical Register*, vol. i. (1886), No. 3215.

- 598d. Drawing of the Face of a Man who had Hypertrophic Cirrhosis of the Liver. There are numerous venous stigmata on the face and neck, some of which bled profusely at intervals. The patient was jaundiced; he drank alcohol to excess. (T. Godart.)

See *John Ward Book* for 1886, No. 127.

- 602a. Drawing of a Child who had suffered an Obscure Injury to the Head. The attitude assumed is suggestive of some chronic form of basal and spinal meningitis, with sclerosis of the nervous tissue. The drawing was made three months after the injury, and whilst the patient was still unconscious. (T. Godart.)

A boy aged 3 fell from a railway train. On admission to the Hospital, he was found to be unconscious, and to have well-marked spastic rigidity of his limbs, with some epileptiform convulsions. After remaining in a comatose condition for many months, he gradually recovered consciousness, and ultimately was cured.

See *Male Surgical Register*, vol. iii. (1887), s. v. J. T. Roe.

- 602b. Drawing of a Child who had Basal Meningitis. The drawing shows the extreme emaciation and the characteristic attitude which occurs in these cases.

See *Mary Ward Book* for 1886, s. v. John Bodington.

608. Drawing of the Face of a Man in whom the temporal muscles had acquired such a degree of hypertrophy as to cause a distinct lump upon either temple, thereby giving to the patient a distinctly leonine expression. The teeth were worn away, so as to expose the dentine. (T. Godart.)

See *Matthew Ward Book* for 1887, Case No. 31.

609. Drawing of an unusually large Gall Stone, which by its impaction in the intestine led to an attack of acute intestinal obstruction. It was removed by operation, and the patient made a good recovery. (L. Mark, Esq.)

The calculus is preserved in Series liii. No. 274b. See the *Lancet*, vol. ii. (1887), p. 1103.

610. Photograph of a Cretin, who had a great enlargement of the thyroid. She was 24 years of age, and had never been out of London. The goitre was of three years' duration. Cf. 298i.

See *Mary Ward Book* for 1886, s. v. E. L. Balls.

611. Drawing of the same patient. (T. Godart.)



## TERATOLOGICAL CATALOGUE.

## SERIES I.—ABNORMAL CONDITIONS OF THE AXIS.

## CLASS V.—ARREST OF DEVELOPMENT.

SUB-CLASS II.—IMPERFECT DEVELOPMENT OF THE BRAIN  
AND ITS MEMBRANES.

- 3443a. Microscopical Sections of an Early Human Embryo, in which there was retroflexion, associated with absence of the spinal medulla and imperfection of the vertebral column. The embryo had probably reached the fiftieth day of intra-uterine life. It measured eight millimetres in length, of which the head alone measured five millimetres.

The sections are fully described, with plates, in the *Transactions of the Obstetrical Society*, vol. xxix. (1887).

Prepared and presented by C. B. Lockwood, Esq.

SUB-CLASS V.—DEFECTIVE CLOSURE OF THE AXIAL CANAL OF  
THE CEREBRO-SPINAL SYSTEM.(c.) *Spina Bifida.*

- 3479a. The Dorsal, Lumbar, and Sacral Spine of a Child, showing that variety of spina bifida known as a Meningo-myelocele. The neural arches are unclosed from the fifth lumbar vertebra to the end of the spinal column. The bodies of the vertebræ are well developed, and the spinal nerves are normal. The wall of the sac is formed by skin and dura mater. The latter, which is continued uninterruptedly from the theca surrounding the spinal cord within the intact part of the neural canal, has been partially separated from the superjacent skin. The arachnoid is continued over the interior of the sac, the cavity of which corresponds to the sub-arachnoid space. The spinal cord is readily traced across the sac to its posterior wall, where the two become inseparably blended. The skin covering the posterior portion of the sac is softened, and appears to be sloughing.

From a child who lived four days. The sac was ruptured during labour.

## SERIES II.

## ABNORMAL CONDITIONS OF THE LIMBS.

## CLASS I.—VARIATION.

(b.) *In the Digits.*

- 3499c. A Supernumerary Little Finger, removed from a newly-born child. It was attached by a slender pedicle to the junction of the

second and third phalanges. As a result of placing the preparation in spirit, the epidermis has shrunk away from the corium. A section into the mass shows the three small masses of cartilage which represent the phalanges.

Presented by E. Evans, Esq.

## CLASS V.—ARREST OF DEVELOPMENT.

### (b.) *Talipes.*

**3509a.** The Right Foot of a New-Born Infant, disarticulated to show the modifications undergone by the bones in a case of congenital talipes varus. In the astragalus the trochlear surface is extended backwards nearly as far as the posterior edge of the lower articular surface, whilst its neck is lengthened and directed inwards with an unnatural obliquity. The articular surface of its head is prolonged on its inner side, and instead of being uniformly convex, it is divided into two parts, the planes of which meet at an obtuse angle. The inner and larger corresponds with the scaphoid, whilst the outer portion, which looks forwards, is unopposed, owing to the displacement which the bone has undergone. The internal malleolar facet is much smaller than usual. In the calcaneum a considerable portion of the upper posterior facet was uncovered, and was marked off from the rest by a low ridge. It articulated with the posterior border of the external malleolus. The inner portion of the posterior facet was continuous with that of the sustentaculum tali. The plane of the cuboidal facet is directed unnaturally inwards, and its outer border is less prominent than usual.

**3509b.** The Left Foot of the Fœtus from which the preceding specimen was obtained. It has not been disarticulated, but, so far as can be seen, the tarsal bones show the same modifications as in the last specimen.

**3509c.** The Right Foot from a Case of Talipes Equino-varus. The bones are disarticulated, to show the various changes which they have undergone. These changes are nearly identical with those already described as occurring in No. 3509a.

**3509d.** The Left Foot, from the same case as the preceding. The tendon of the tibialis posticus is seen to occupy the position which is common in this deformity.

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## SERIES III.

## ABNORMAL CONDITIONS OF THE OSSEOUS AND MUSCULAR SYSTEMS.

**3519a.** Two Contiguous Vertebæ from the mid-dorsal region of an adult female. The vertebæ are united by the bony ankylosis of their

bodies, laminae and transverse processes. The union is so smooth and complete, that it probably occurred during infancy or intra-uterine life.

#### **A HIP-JOINT WITH ABSENCE OF THE ACETABULAR MARGIN.**

- 3524c. A Microcephalic Foetus. In addition to the diminution in size of the brain, the spinal cord is small, and the specimen presents the following abnormalities:—The hands and feet are clubbed and the spine is curved; there is a defect of the right eye, stiffness of both knees, and an absence of the margin of the acetabulum.

See *Transactions of the Pathological Society*, vol. xxxviii. p. 303, Case i.

Presented by C. B. Lockwood, Esq.

- 3524d. Absence of the Margin of the Acetabulum with displacement of the head of the femur.

A foetus presenting the above deformity, and in addition ectopion of the abdomen and an abnormality of the hands. The elbows are dislocated and the knees are over-extended. The foetus lay with its legs firmly flexed upon the abdomen.

See *Transactions of the Pathological Society*, vol. xxxviii. p. 305, Case ii.

Presented by C. B. Lockwood, Esq.

### [SERIES IV.

## ABNORMAL CONDITIONS OF THE VASCULAR SYSTEM.

### CLASS II.—OF THE HEART.

#### SUB-CLASS V.—ARREST OF DEVELOPMENT.

- 3612a. A Malformed Heart, the aorta communicating with both ventricles. The ventricular septum is deficient in its upper part, and the aorta arises over the aperture which is common to both the cavities, chiefly, however, from the right, which, with its auricle, is larger than the left. The pulmonary artery is reduced to a narrow tube, which has no connection with the ventricles, but immediately below its bifurcation it received blood through the enlarged and patent ductus arteriosus. The foramen ovale is incompletely closed; a glass rod has been passed through it.

From a male child aged 16 months, who had been cyanosed from birth, the colour becoming deeper when he was cold. On admission, his face, lips, palate, and tongue were of a deep blue colour, and a loud systolic murmur was heard over the left base of his heart. The murmur varied greatly in intensity, and was sometimes almost inaudible. Death occurred after removal from the Hospital in a sudden attack of dyspnoea.

Presented by E. P. Furber, Esq.

(**SERIES V.**)

**ABNORMAL CONDITIONS OF THE BLOOD GLANDS.**

**CLASS I.—VARIATION.**

- 3623a.** The Liver of a Child aged 9 months, which is without any trace of a gall-bladder. The fossa for the gall-bladder is occupied by a rounded ligament. The infant was jaundiced from its birth, and never passed any bile-stained fæces.

| Presented by C. A. James, Esq.

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(**SERIES VI.**)

**ABNORMAL CONDITIONS OF THE DIGESTIVE  
ORGANS.**

**CLASS I.—VARIATION.**

- 3632a.** A Case of Undescended Cæcum from an Anencephalic Fœtus. The sigmoid flexure with the left colon and transverse colon are in their usual position, but the right colon is firmly attached by strong fibrous adhesions to the under-surface of the right lobe of the liver. In other respects the abdominal viscera are normal. The processûs vaginales of the testes have been laid open to show that, although the cæcum has not descended, the testicles are in their proper position.

Presented by C. B. Lockwood, Esq.

- 3632b.** A Specimen similar to the preceding.

Presented by C. B. Lockwood, Esq.

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**SERIES VII.**

**ABNORMAL CONDITIONS OF THE URINARY  
ORGANS.**

**CLASS V.—ARREST OF DEVELOPMENT.**

- 3666a.** The Kidneys from a woman aged 30. The right kidney is congenitally atrophied. It measures two inches in length, and only weighs 160 grains, whilst the left kidney is larger and heavier than usual. From the size of the pelvis and ureter, however, and from the healthy condition of the parenchyma of the atrophied kidney, it appears as if the organ had never been entirely functionless.



## SERIES VIII.

ABNORMAL CONDITIONS OF THE GENERATIVE  
ORGANS.

## CLASS V.—ARREST OF DEVELOPMENT.

- 3670a.** The Testes, Scrotum, and Perineum from a Cryptorchid. In the left testicle there is a failure of attachment of the gubernaculum to the testicle and epididymis. The muscle, instead of being attached to these organs, spreads out and terminates in a broad layer of peritoneum, which lay free in the peritoneal sac. The right testicle, which forms the upper specimen, is normal, except that the gland and epididymis seem longer than usual. The fibres of the gubernaculum pass up behind the testicle into the plica vascularis. The penis and scrotum show the undeveloped state of the latter, and the great apparent length of the perineum which results from this condition. So far as could be ascertained, the lower attachments of the gubernaculum were normal, and on each side the processus vaginalis was about half an inch in length.

Presented by C. B. Lockwood, Esq.

CONGENITAL ABSENCE OF THE EXTERNAL GENITAL OR-  
GANS AND ANUS.

- 3670b.** A Three Months' Embryo, showing the small intestine and colon contained in an omental sac which has been slit open. The lower end of the sac is adherent to the anterior abdominal wall, just above the bladder, close to the umbilicus. One of the intestinal coils seems to blend with the abdominal wall in the same place. The testicles lie immediately above the inguinal ring, and appear to be normal. There is no trace of a penis, but there are two slight elevations marking the site of the two halves of the scrotum. The anus is completely absent, and it is uncertain whether there are any apertures which could give exit to the urine or fæces.

Prepared and presented by C. B. Lockwood, Esq.

## ANATOMICAL AND PHYSIOLOGICAL CATALOGUE.

## SERIES VIII.

## THE OSSEOUS SYSTEM.

- 206a.** A Papuan Skull from Friday River, New Guinea. The body from which it was obtained is stated to have formed part of a cannibal feast.

Brought from Australasia and presented by C. J. Heath, Esq.

- 487a. The Skull and Hyoid of a Foetal Calf about  $2\frac{1}{2}$  months from impregnation of the ovum.

Presented by Mr. Whitehead.†

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SERIES XX.

THE ARTERIES AND VEINS.

- 870a. A Portion of the Sigmoid Flexure and Peritoneum, showing the recurrent branches of the spermatic artery.

*Cf.* Pathological Series xx. No. 2140e.

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SERIES XXIX.

ORGANS OF GENERATION IN THE MALE: THE  
TESTICLE, ITS COVERINGS AND DUCT.

- 1124a. The Testis and Vas Deferens. The spermatic cord has been dissected in such a manner as to show that four vasa aberrantia are present.

Prepared and presented by H. Stanley, Esq.

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SERIES XXXII.

ORGANS OF GENERATION IN THE FEMALE DURING OR  
SHORTLY AFTER PREGNANCY, WITH SPECIMENS  
ILLUSTRATING THE DEVELOPMENT OF THE OVUM.

RUPTURE OF THE UTERUS.

- 1234a. A Portion of the Posterior Wall of the Uterus of a Primipara, who died on the fourth day after cæsarian section had been performed in Queen Charlotte's Hospital. The operation was rendered necessary by the contracted condition of the pelvis, and it was done twelve hours after the commencement of active labour. The section is made through the whole length of the uterus, from the fundus to the external os, and is nine inches in length: half an inch above the external os is seen the vaginal insertion. The different characters of the upper thickened portion, measuring six inches in length, and of the lower thin portion, three inches in length, are well seen. The upper retracted portion, measuring from three-quarters to an inch in thickness, is about four times as thick as the lower portion; the line of junction of the two—known as Bandl's ring or the contraction-ring—is well marked. The internal surface of the upper

part is shaggy, with fragments of placenta, whilst the lower part is smooth, and presents, both to the naked eye and under the microscope, all the characters of the cervix, the transition being abrupt at the ring. In this specimen the contraction ring is identical with the internal os, and the cervix has been stretched to a length of 3 inches. There is no circular or large sinus at the internal os.

A drawing is preserved in Series xxxviii. No. 36.

Presented by W. S. A. Griffith, Esq., M.B.

**1307b.** An Umbilical Cord, showing irregular twisting, from a child born at full time. The foetal half of the cord is seen to be much more twisted than the placental portion. The placental extremity is indicated by three styles, which are inserted into the arteries, one of which has already bifurcated. †

**1308b.** The Ovisac and Egg of the Common Dogfish (*Scyllium canicula*). The germinal vesicle is just beginning to segment.

Presented by T. W. Shore, Esq., M.D.

#### SERIES XXXIV.

### DISSECTIONS OF VARIOUS REGIONS OF THE HUMAN BODY.

**1334E.** The Back of the Orbit in Coronal Section. The remains of the sclerotic has been pulled out of the capsule of Tenon, to show its relation to the optic nerve.

**1334F.** A Coronal Section of a Right Orbit. The conjunctiva and capsule of Tenon have been incised round the margin of the cornea, and a piece of blue paper put into the sac of the conjunctiva. The outer attachment of the capsule of Tenon and suspensory ligament may be seen, but the section does not quite divide the inner attachment. The lower part of the capsule of Tenon is thickened by the transverse fibres of the suspensory ligament, and is pierced by the inferior oblique.

**1334G.** A Sagittal Section through the Right Orbit. The sclerotic has been pulled out of the capsule of Tenon, and the internal rectus and its intra-capsular ligament has been brought into view. The loose cellular tissue about the sclerotic is a portion of the tunica adventitia.

**1334H.** A Horizontal Section through the Left Orbit. The remains of the eye has been drawn out of the capsule of Tenon to show the intra-capsular ligament of the superior rectus, and also the bend which the muscle makes towards the nose inside the capsule of Tenon.

The four preceding specimens were prepared and presented by C. B. Lockwood, Esq.

- 1374a. A Dissection of the Dorsal Surface of the Fore-arm.

Prepared by E. W. Willett, Esq., M.B.

- 1387f. A Preparation to show the parts exposed in amputation at the shoulder-joint by an external flap.

- 1387g. A Preparation to show the parts exposed in amputation at the hip by an anterior flap.

The two preceding specimens were prepared and presented by James Berry, Esq.

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SERIES XXXVI.

CATALOGUE OF INVERTEBRATA.

SUB-KINGDOM III.—ANNULOIDA. CLASS II.—SCOLECIDA.

- 1471a. A Specimen of *Aspidogaster Conchicola*, obtained from the fresh-water mussel. [In the Microscopical Cabinet.]

Presented by D'Arcy Power, Esq.

SUB-KINGDOM IV.—ANNULOSA. (B.) ARTHROPODA.

CLASS IV.—INSECTA.

- 1538a. A Male and Female Specimen of *Locusta Dux*, preserved in spirit. A black bristle has been inserted into the female genital orifice.

Presented by S. C. K. Moberly, Esq.

SUB-KINGDOM V.—MOLLUSCA. (A.) MOLLUSCOIDA.

I.—POLYZOA.

- 1563a. A Microscopical Preparation of *Plumatella Repens*, showing the avicularia.

Presented by D'Arcy Power, Esq.

II. TUNICATA.

- 1568a. *Botryllus Stellatus*. A portion of a fixed compound ascidian. The mass consists of a firm gelatinous matrix, in which are embedded the individuals arranged in star-shaped clusters.

Dredged in Portland Roads. —

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## SERIES XXXVII.

## CATALOGUE OF CASTS AND MODELS.

- 37a. Two Wax Models of the human Female Breast. One is in a virgin condition, the other shows the areola developed during pregnancy.  
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- 42b. Models of Crystals, showing the process of repair. 63.
- 88a. Cast of the Legs and portions of the Feet of a Child in whom there was a congenital absence of the patella with genu valgum.  
See *Male Surgical Register*, vol. iii. (1887), No. 594.

## SERIES XXXVIII.

DRAWINGS OF CONGENITAL MALFORMATIONS  
AND NORMAL STRUCTURES.

33. Drawing of the Hand of a Boy, upon whose left middle finger was a congenital tumour. The swelling was situated over the second phalanx and was densely hard. (T. Godart.)  
See *Male Surgical Register*, vol. v. (1887), No. 559.
34. Drawings of a Child aged 6 months, who was brought as an out-patient. He had harelip, a congenital absence of the left radius, and a bifid right thumb. (T. Godart.)
35. Photograph of a Girl aged 14, who had the remains of a branchial fistula on the right side of her neck. The rudiment is described as being a small polypoid growth which appears to contain cartilage. It is situated over the sterno-mastoid muscle, one and a half inch above the clavicle.  
See *Faith Ward Book* for 1887, No. 145.
36. Drawing of a Portion of the Posterior Wall of the Uterus, from a primipara who died on the fourth day after cæsarian section, performed twelve hours after the commencement of actual labour. The contraction-ring is identical with the internal os, the cervical glands being visible immediately below the ring.  
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## SERIES XXXIXA.

## CATALOGUE OF HISTORICAL INSTRUMENTS.

6. A Stethoscope made according to Lænnec's model. The instrument consists of a wooden cylinder measuring eleven and three-quarters

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Sir George Burrows wrote of it :—" I am happy to send you a venerable relic of the earliest study of auscultation at St. Bartholomew's Hospital. The old wooden solid cylinder is a facsimile to that used in the Lænnec wards at Paris. It was the property originally of Dr. Bond, the Regius Professor of Physic at Cambridge, who with myself was Dr. Latham's clerk at St. Bartholomew's Hospital in 1827-28. We were two of the first to study auscultation in the wards there. With progressive improvements in the form of the stethoscope this old wooden tube was left unused on the table of the ward. The nurses appropriated it to their own use to stir up the linen in their washtubs, from which inglorious service I rescued it, and preserved it as a memento of my earliest studies in auscultation."

Presented by the late Sir George Burrows, Bart., D.C.L.

7. A Stethoscope made according to Lænnec's model.

It formerly belonged to Mr. C. R. Thompson, of Westerham, Kent.

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8. A Case of Lithotrites, made in France about the year 1827. They are copies of the instruments employed by Civiale. The lithotrite was worked by means of the string and drill-bow. The instruments consist of—

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# STATISTICAL TABLES

OF THE

*Patients under Treatment*

IN THE WARDS OF

## ST. BARTHOLOMEW'S HOSPITAL

DURING 1886.

BY

THE MEDICAL REGISTRAR,

SAMUEL WEST, M.D. (Oxon.)—F.R.C.P. ;

AND

THE SURGICAL REGISTRAR,

ANTHONY A. BOWLBY, F.R.C.S.



London :

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1887.



## P R E F A C E.

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The Classification of Diseases in the Medical Tables  
is that adopted by the College of Physicians in their  
Nomenclature of Diseases.





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# ST. BARTHOLOMEW'S HOSPITAL.

1886.

Number of Beds in Medical Wards (including 14 for Diseases of Women)	236
" " " Surgical .. { including 6 for Diseases of Women } { and 26 for Ophthalmic Cases }	395
" " " Unassigned ...      ...      ...      ...      ...      ...      ...	41
	<hr/> 672

(Radcliffe Ward was closed during the whole year.)

GENERAL STATEMENT OF THE PATIENTS UNDER TREATMENT  
DURING THE YEAR 1886.

Patients remaining in January 1st, 1886:—

Medical	...	...	...	...	...	209	} ... 520
Surgical	...	...	...	...	...	311	
During the year 1886:—							} ... 6,908

Admitted during the year 1886 :—

Medical	...	...	...	...	...	2,207	} ... 6,388
Surgical	...	...	...	...	...	4,181	

Discharged :—

Medical	...	...	...	...	1.857	{ ...5,810 }
Surgical	...	...	...	...	3.953	

Died :—

Medical	...	...	...	...	...	393	} ... 608	} ... 6,908
Surgical	...	...	...	...	...	215		

Remaining in January 1st, 1887:—

Medical	...	...	...	...	...	166	} ... 490)
Surgical	...	...	...	...	...	324	

Patients brought in Dead	...	...	...	...	...	38
--------------------------	-----	-----	-----	-----	-----	----



## OCCUPATIONS OF MALE PATIENTS.

Assistants ... .. 11	Confectioners ... .. 2	Horse-hair dresser ... 1
Agents ... .. 4	Coach painters ... .. 3	Hammermen ... .. 3
Artists ... .. 2	Carters ... .. 8	Hairdressers ... .. 2
Attendants ... .. 2	Cabmen ... .. 63	
Actor .. ... 1		
	Dispensers ... .. 4	Iron workers ... .. 11
	Dustmen ... .. 6	Ivory workers... .. 3
Bacon dryers ... .. 2	Doctors... .. 2	Instrument maker ... 1
Bargemen ... .. 9	Drovers ... .. 3	Inspector police ... 1
Bookbinders ... .. 23	Decorators ... .. 4	Ironmongers ... .. 5
Barmen ... .. 19	Draughtsman ... .. 1	
Bricklayers ... .. 51		
Blacksmiths ... .. 8		
Boatman ... .. 1		
Brass finishers... .. 5	Engineers ... .. 14	Jewellers ... .. 5
Bonnet makers ... .. 3	Engine drivers ... 12	Joiners... .. 2
Bathmen ... .. 2	Errand boys ... .. 37	Japanner ... .. 1
Brush makers ... .. 2	Envelope makers ... 3	
Boiler makers ... .. 3	Electric light workers.. 2	
Butchers ... .. 47		
Bakers ... .. 12		
Blind makers ... .. 4		
Button makers ... .. 3	Farriers... .. 4	Key makers ... .. 3
Basket makers ... .. 4	French polishers ... 23	Knife grinders ... .. 2
Boot makers ... .. 41	Farmers ... .. 2	
Box makers ... .. 19	Fishmongers ... .. 8	
Brewers ... .. 44	Firemen ... .. 3	
Builders ... .. 3	Frame makers... .. 3	Lithographers... .. 4
Button makers ... .. 2	Florists... .. 2	Lead workers ... .. 4
		Leather cutters ... .. 3
		Labourers ... .. 456
		Letter sorters ... .. 5
Coopers ... .. 4	Gamekeepers ... .. 2	
Clerks ... .. 55	Gilders... .. 3	
Cooks ... .. 2	Gasfitters ... .. 11	
Clock makers ... .. 6	Glass cutters ... .. 4	Mat makers ... .. 2
Carmen ... .. 91	Glass blowers ... .. 9	Machinists ... .. 5
Coal heavers ... .. 11	Gas stokers ... .. 4	Miner ... .. 1
Coachmen ... .. 18	Gold worker ... .. 1	Messengers ... .. 23
Cabinet makers ... 23	Greengrocers ... .. 9	Milkmen ... .. 6
Carvers... .. 3	Gardeners ... .. 14	Masons ... .. 17
Cellarmen ... .. 6	Gold polishers... .. 2	Musicians ... .. 7
Costermongers ... 31	Goldsmiths ... .. 3	Miller ... .. 1
Compositors ... .. 16	Grooms... .. 8	
Carpenters ... .. 32	Gunsmiths ... .. 3	
Commercial travellers.. 14	Grocers... .. 4	
Collectors ... .. 12		
Coach builders ... .. 6		
Caretakers ... .. 2	Hatter ... .. 1	Newsvendors ... .. 2
Cork cutters ... .. 2	Hawkers ... .. 19	Night watchmen ... 7
Coppersmiths ... .. 3	Horsekeepers ... .. 10	

OCCUPATIONS OF MALE PATIENTS (*continued*).

Omnibus drivers ...	2	Sailors ...	27	Timekeepers ...	2
Oilman... ..	1	Smiths ...	7	Turncock ...	1
Ostlers ...	5	Signalmen ...	3	Travellers ...	12
Organ grinder...	1	Scale makers ...	3	Tram conductors ...	3
		Shopmen ...	94	Teachers ...	4
		Scholars ...	371		
		Scavengers ...	3		
		Shoeblacks ...	5		
Pensioner ...	1	Soldiers ...	7		
Paper hangers...	2	Sawyers ...	2	Upholsterer ...	1
Potmen ...	18	Students ...	10	Umbrella makers ...	3
Porters... ..	141	Shipwrights ...	2		
Piano makers ...	2	Signalman ...	1		
Paper folders ...	3	Sewermen ...	2		
Plumbers ...	15	Stationer ...	3		
Policemen ...	17	Shepherd ...	1	Van drivers ...	12
Printers ...	54	Silk dyers ...	2	Van guards ...	13
Photographers...	2	Stonemasons ...	14	Van boys ...	41
Painters ...	51	Stone grinders ...	2		
Publicans ...	5	Schoolmasters...	2		
Paper colourer ...	1	Sweeps... ..	6		
Packers ...	11	Stewards ...	3		
Paper workers...	6	Sack makers ...	3		
Packing-case makers...	7	Stick mounters ...	6	Wire drawers ...	3
Plasterers ...	4	Stevedores ...	5	Warehousemen ...	21
Postmen ...	5	Servants ...	33	Wood carvers ...	4
				Writers... ..	6
				Watermen ...	12
				Watch makers...	6
				Wheelwrights ...	3
				Weavers ...	4
				Waiters ...	21
Rat catchers ...	3	Tailors ...	30		
Ragmen ...	4	Tin-plate workers ...	2		
Rope makers ...	2	Tobacconists ...	5		
Railway servants ...	17	Telegraphists ...	4		
Reporters ...	2	Telegraph boys ...	6		
		Typefounders ...	8		
Stokers... ..	5	Turners ...	20	Zinc workers ...	2

## OCCUPATIONS OF FEMALE PATIENTS.

Actress ... .. 1	Feather dressers ... 4	Nurses ... .. 30
Artificial-flower makers 18	Factory girls ... .. 31	Needlewomen ... .. 41
Artists ... .. 3	Flower sellers ... .. 3	Net makers ... .. 2
	Feather curler ... .. 1	
	Furriers ... .. 7	
	Fringe makers ... .. 2	
Barmaids ... .. 10		Paper sorters ... .. 3
Box makers ... .. 13		
Bonnet makers ... .. 10		
Bag makers ... .. 3	Governesses ... .. 4	Rag sorters ... .. 3
Bookfolders ... .. 9	Glover ... .. 1	
Brush drawer ... .. 1	Goldbeaters' skin makers 2	
Bottlers ... .. 2		Servants ... .. 278
Bookkeepers ... .. 5		Shopwomen ... .. 67
Bead worker ... .. 1	Harlots ... .. 121	Sempstresses ... .. 21
	Housekeepers ... .. 11	School girls ... .. 266
	Housewives ... .. 705	Straw workers ... .. 7
Card makers ... .. 2		
Cooks ... .. 24	Ironers ... .. 8	Tailoresses ... .. 6
Charwomen ... .. 37	Indiarubber workers ... 2	Trimming makers ... 2
Cigar maker ... .. 1		Tie makers ... .. 3
Collar makers ... .. 11		Toy makers ... .. 4
Cap makers ... .. 4	Lace makers ... .. 2	Telegraphists ... .. 3
Clerks ... .. 6	Laundresses ... .. 25	
		Umbrella makers ... .. 6
Drapers ... .. 2	Machinists ... .. 29	Upholsteresses ... .. 5
Dressmakers ... .. 19	Mantle makers ... .. 3	
Dyers ... .. 2	Milkwomen ... .. 2	Waitresses ... .. 7
	Milliners ... .. 9	Ward maids ... .. 7
	Match makers ... .. 2	Wool workers ... .. 8
Envelope folders ... .. 2	Midwives ... .. 3	

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MEDICAL REPORT.

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TABLE I. (continued).

[illegible]

[illegible]

TABLE I. (continued).

DISEASE.	Total.																							
	Discharged.		M.	F.	Died.	Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.		
	M.	F.	M.	F.	M.	F.	Discharged.	Died.	M.	F.	M.	F.	M.	F.	M.	F.	Discharged.	Died.	M.	F.	M.	F.	Discharged.	Died.
Hydrocephalus .....	2	...	1	...	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tumoural Meningitis .....	14	...	8	6	...	...	2	4	...	2	1	...	...	...	...	...	2	1	...	...	...	...	...	...
Simple .....	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Concussion .....	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Apoplexy .....	9	...	7	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hemiplegia .....	48	...	21	27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cerebral Tumour .....	8	...	3	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Thrombosis of Lateral Sinus .....	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cerebellar Tumour...	3	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bulbar Paralysis .....	3	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lateral Sclerosis .....	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Disseminated Sclerosis .....	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tabes Dorsalis .....	8	...	...	8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Friedreich's Ataxia .....	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Progressive Muscular Atrophy .....	3	...	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Myelitis .....	10	...	1	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Paraplegia .....	7	...	3	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Infantile Palsy .....	2	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...



TABLE I. (continued).

[illegible]

TABLE I. (continued).

DISEASE.	Total.		Died.		Under 5.	— 10.	— 15.	— 20.	— 30.	— 40.	— 50.	— 60.	Over 60.
	M.	F.	M.	F.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.
DISEASES OF THE NERVOUS SYSTEM (continued).													
Vertigo ... ..	1	...	...	...	...	...	...	...	...	...	...	...	...
Headache ... ..	3	1	...	...	...	...	2 1	...	...	...	...	...	...
Tremors ... ..	1	1	...	...	1	...	...	...	...	...	...	...	...
Paralysis Agitans ...	1	1	...	...	...	...	...	...	...	...	...	...	1
Hypochondriasis ...	3	3	...	...	...	...	...	...	...	2	1	...	...
Melancholia ... ..	3	2 1	...	...	...	...	...	2	...	...	1	...	...
Dementia ... ..	4	3	1	...	...	...	...	...	...	2	...	1	...
Mania ... ..	5	3 2	...	...	...	...	1 1	...	...	...	1	...	...
Imbecility ... ..	1	1	...	...	...	...	1	...	...	...	...	...	...
General Paralysis ...	2	1 1	...	...	...	...	...	...	...	...	1	...	...
258	115	103	27	13									



DISEASE.	Total.		Discharged.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.		
	M.	F.	M.	F.	M.	F.	M.	F.	Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		
									M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.
DISEASES OF THE RESPIRATORY SYSTEM.																									
Laryngitis ...	13	10	3	...	...	...	4	...	2	...	2	...	...	...	1	1	...	2	...	...	...	...	...	...	
Croup ...	8	6	2	...	...	...	4	1	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...		
Abductor Paralysis ...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
Aphonia ...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
Tumour in Larynx ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
Whooping Cough ...	13	7	4	...	...	...	6	4	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...		
Asthma ...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
Bronchitis ...	89	35	49	...	...	...	9	11	1	3	...	...	...	...	...	...	...	...	...	...	...	...	...		
Emphysema... ..	29	12	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
Phthisis ...	86	25	20	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
Pneumonia ...	156	93	32	...	...	...	11	6	2	11	5	...	...	...	...	...	...	...	...	...	...	...	...		
" Catarrhal ...	7	1	3	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
Gangrene of Lung ...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
Hæmoptysis... ..	13	11	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
Pleurisy, Dry ...	21	15	6	...	...	...	1	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
" with Effusion ...	41	27	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
Empyema ...	23	15	5	...	...	...	1	1	1	3	...	...	...	...	...	...	...	...	...	...	...	...	...		
Pneumothorax ...	3	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
Mediastinal Tumour ...	5	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
	515	269	145	71	30	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		



TABLE I. (continued).

DISEASE.	Total.	Discharged.		Died.	Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.		
		Discharged.			Died.	Discharged.		Died.	Discharged.		Died.	Discharged.		Died.	Discharged.		Died.	Discharged.		Died.	Discharged.		
		M.	F.			M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.	M.
DISEASES OF THE DIGESTIVE SYSTEM.																							
Stomatitis .. ..	5	4	1	..	..	3	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Glossitis .. ..	1	1	..	..	..	2	2	3	..	1	1	3	3	5	9	1	3	1	..	..	..	..	
Tonsillitis .. ..	34	16	18	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Dysphagia .. ..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Stricture of Oesophagus ..	2	1	..	1	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	
Vomiting .. ..	8	1	6	1	..	1	1	1	..	..	..	..	3	..	..	..	..	..	..	..	..	1	
Dyspepsia .. ..	31	12	19	..	..	1	..	..	1	1	2	2	5	8	1	5	..	3	3	..	..	1	
Gastritis .. ..	11	5	6	..	..	..	..	..	..	..	..	..	2	2	1	2	..	1	2	..	..	..	
Gastralgia .. ..	7	2	5	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	
Gastric Ulcer .. ..	15	2	12	1	..	..	..	2	..	..	2	3	3	3	1	4	1	1	1	..	..	..	
Hæmatemesis .. ..	21	9	10	2	..	..	..	..	..	..	..	..	2	3	2	3	4	2	1	2	..	1	
Cancer of Stomach...	17	8	4	4	1	..	..	..	..	..	..	..	..	..	1	1	2	1	3	2	..	1	
Diarrhoea .. ..	32	18	11	2	1	..	4	3	1	2	2	1	1	5	3	2	1	2	1	1	1	..	
Constipation .. ..	16	5	11	..	..	..	..	..	..	..	1	1	2	3	2	2	2	2	1	1	..	2	
Intestinal Colic .. ..	9	6	3	..	..	..	..	..	1	..	3	1	..	3	1	2	..	1	..	..	..	..	
Intussusception .. ..	1	..	..	1	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
Typhlitis .. ..	12	10	2	..	..	..	..	..	1	1	7	1	..	1	..	..	..	..	..	..	..	..	
Intestinal Obstruction ..	8	6	..	1	1	..	2	..	..	1	1	1	1	1	..	..	1	..	1	1	..	1	
Malignant Disease of Large Intestine .. ..	6	1	1	3	1	..	..	..	..	..	..	..	1	..	..	1	..	..	3	1	..	..	
Prolapse of Rectum .. ..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	

[illegible]



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TABLE I. (continued).

DISEASE.	Total.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
	Discharged.				Discharged.		Discharged.		Discharged.		Discharged.		Discharged.		Discharged.		Discharged.		Discharged.		Discharged.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
DISEASES OF THE FE- MALE GENITIVE SYSTEM (continued).																						
Polyp of Uterus ...	14	...	...	...	...	...	...	...	...	...	...	...	2	...	3	...	6	...	...	...	...	...
Fibroid of Uterus ...	23	...	...	...	...	...	...	...	...	...	...	...	4	...	9	...	8	...	2	...	...	...
Cancer of Uterus ...	19	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	14	...	2	...	...	...
Perimetritis... ..	24	...	...	...	...	...	...	...	...	...	...	...	10	...	11	...	2	...	1	...	...	...
Parametritis ...	22	...	...	...	...	...	...	...	...	...	...	...	12	...	6	...	4	...	...	...	...	...
Prolapse of Ovary ...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
*Cyst of Ovary ...	8	...	...	...	...	...	...	...	...	...	...	...	4	...	1	...	1	...	1	...	...	...
Parovarian Cyst ...	2	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...
Deformed Pelvis ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...

\* For Cases of Ovarian Cyst operated on refer to Surgical Tables.









# ABSTRACT OF TABLE I.

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DISEASES.				Total Number of Cases completed during the Year 1886.	Number of Cases discharged.		Deaths.	Remaining in the Hospital at the end of the year 1886.	
					M.	F.	M.	F.	
GENERAL DISEASES, A				180	90	56	16	18	
Do. B				382	167	185	19	11	
LOCAL DISEASES—									
Diseases of the Nervous System				258	115	103	27	13	
" Circulatory System				234	93	70	42	29	
" Respiratory System				515	269	145	71	30	
" Digestive System				412	162	174	39	37	
" Urinary System				141	71	42	15	13	
" Female Generative System				213	...	207	...	6	
" Cutaneous System				23	10	11	2	...	
CONDITIONS NOT NECESSARILY ASSOCIATED WITH GENERAL OR LOCAL DISEASES—									
Poisons—				58	43	10	4	1	
				2,416	1,020	1,003	235	158	166
					2,023		393		2,416

## APPENDIX TO TABLE I.

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*Typhoid Fever.*—M 10 : Suffered from severe epistaxis early.

F 20 : Died of pneumonia of the left lung.

Five cases died of hæmorrhage, 3 M, 2 F ; and in one, M 17, there was severe hæmorrhage. One recovery took place.

Five cases died of perforation, 4 M, 1 F.

In one case there were two, and in another four independent perforations ; in all cases in the last 18 inches of the ileum. One case, M 17, had effusion into the left knee during convalescence ; and another, F 24, periostitis of clavicles and ribs.

*Hydrophobia.*—M 13 : Was bitten, on April 6th, by a dog on the little finger ; was well until August 9th, then had pain in the wrist and arm. On August 11th some difficulty in swallowing. Died on the 14th. The temperature, which had been normal till that day, rose shortly before death to 107°.

# *Rheumatic Fever.*

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DISEASE.	Total.	Discharged.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
1st Attack ...	66	32	34	...	...	...	1	1	...	6	...	11	9	13	11	5	2	2	3	...	1	...	...
2nd Attack ...	39	19	20	...	...	...	...	1	1	3	1	4	7	8	6	3	2	...	3	...	...	...	...
3rd Attack ...	20	11	9	...	...	...	...	1	...	1	1	1	2	5	3	3	...	1	1	...	1	...	...
4th Attack and more	9	4	5	...	...	...	...	...	...	...	...	1	2	2	...	1	...	1	...	2	...	...	...
Unspecified ...	12	3	9	...	...	...	...	...	...	2	...	2	1	1	2	...	1	...	1	...	2	...	...
	146	69	77	...	...	...	1	2	3	4	10	19	21	29	22	12	5	...	3	9	...	6	...

	TOTAL.	M.	F.	Permanent Heart Disease.										Myocarditis.		
				No Heart Disease.		Mitral.		Aortic.		Aortic and Mitral.		Pericarditis.				Pericarditis and Mitral.
				M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.
1st Attack ... ..	66	32	34	15	14	10	13 <sup>1</sup>	1 <sup>2</sup>	...	2 <sup>3</sup>	...	1 <sup>4</sup>	3 <sup>5</sup>	6 <sup>6</sup>	1	...
1. F 11, had chorea afterwards in hospital. 2. M 17, the aortic murmur was double. 3. M 18, had double aortic as well as mitral systolic. 4. F 20, had chorea a month later. Average age of males = 23·8 years.																
2nd Attack ... ..	39	19	20	6	3	8	15	1	...	3	...	17	1	...	1	...
Average age of females = 22·5 years.																
7. M 25, had pneumonia at left base, and after recovering from this developed typhoid fever. He had a relapse, but ultimately recovered.																
3rd Attack ... ..	20	11	9	4	1	5	7	1	1	...	...	...	1	...	...	...
4th Attack and more ...	9	4	5	1	...	1	2	1	...	1	...	...	...	3	...	...
Unspecified ... ..	10	2	8	1	1	...	6	...	1	...	...	1	...	...	...	Two cases unspecified

Percentage of Cases with Permanent Heart Mischief:—

1st Attack.....	56·	4th and more .....	90·
2nd Attack .....	76·8	Unspecified .....	80·
3rd Attack .....	75·		

The percentage for the whole number of cases is 75·6 in which permanent heart mischief resulted.



*Chlorosis*.—F 18 : Had thrombosis of right femoral vein.

*Leucocythæmia*.—M 21 : In 1880 at Cape, when he had ague and dysentery ; spleen enlarged then ; great general enlargement of glands and of spleen on admission ; epistaxis troublesome ; vessels of retina very tortuous ; white cells greatly increased.

*Exophthalmic Goitre*.—F 21 : Had no exophthalmos. F 19 and F 21 : Had mitral regurgitation. F 31 : Died : 2 years exophthalmos ; 1½ year palpitations ; 1 year goitre ; rheumatic fever a year ago, leaving mitral regurgitation. Patient admitted with dropsy, and died of the heart lesion. Disease of both aortic and mitral valves was found, with adherent pericardium and pleuritic effusion.

*Goitre*.—F 35 : Died of malignant disease of the thyroid gland, and was found to have secondary deposits in the brain.

*Leucocythæmia*.—M 1 : Had leucocythæmia in large spleen, and died of diphtheria.

*Addison's Disease*.—F 26 : Died ; both suprarenal capsules were reduced to "mere shreds" of tissue.

*Acute Tuberculosis*.—M 8 : Had for 5 years great enlargement of the glands of the neck, and the diagnosis was made of Hodgkins' disease, but the patient died of acute general tuberculosis, and the glands proved to be tubercular.

*Apoplexy*.—In 2 cases the kidneys were granular post-mortem.

*Hemiplegia*.—

Left side—6 M ; 11 F.

Right side—18 M ; 11 F.

In 9 cases (4 M, 5 F) associated with morbis cordis, and thought to be embolic. In 2 (M 34, F 27) the disease was aortic. In 1, both aortic and mitral (F 30) ; and in the rest mitral only.

In 1 case (M 46), thought to be due to syphilis. In 1, to meningitis (F 16) ; it was associated with optic neuritis. F 4, followed caries of right mastoid bone, the result of chronic otitis. In 1 case (M 8) there was much spasm of the side.

*Cerebral Tumour*.—F 63 : Secondary to cancer of breast.

*Thrombosis of Lateral Sinus*.—F 21 : Cause not known, but clot softening. Abscesses in lung and empyema.

*Tabes Dorsalis*.—The fatal case (M 43), died of tuberculosis.

*Myelitis*.—M 32 : Due to caries of 4th, 5th, 6th cervical and 1st dorsal vertebræ.

*Paraplegia*.—In 3 cases spastic (M 27, M 36, M 51). The fatal case (F 25), due apparently to primary malignant disease (sarcoma) of cord, commencing in lumbar enlargement, and extending into but not through vertebral foramina ; tumours were also found in optic commissure, in corpus callosum, in right optic thalamus and nucl. caud., also in cerebellum, and upon both auditory nerves.

*Peripheral Neuritis*.—3 out of the 4 were in all probability alcoholic.

*Chorea*.—7 cases had organic heart disease ; but in 4 of these there had been previous rheumatic fever. In 3 cases it followed rheumatic fever at intervals of 7 weeks, 6 months, and 6 months. The murmur was in all cases systolic mitral.

*Athetosis*.—M 26 : At 3 years of age, a fit followed by the movements of the left side, which have continued ever since; the right side became somewhat involved at the age of 23.

*Epilepsy*.—F 26 : Had lead colic twice during the last 10 months; miscarried 10 days before admission, March 1st; had fits on 8th, 9th, 10th of March, with vomiting; and on 11th had many fits, and became unconscious (status epilepticus); ultimately recovering completely; the fits were connected with the lead poisoning. M 25 : Fatal; had acute tuberculosis. 1 case became maniacal. F 54 : Had had cancer of the breast, which was removed; the fits were thought to be due to secondary growth in brain.

*Hysteria*.—In 2 cases (F 36, F 45) there was paraplegia.

#### *Morbus Cordis*.—

*Aortic Disease*.—1, F 25, was a case of pure stenosis. In 1, M 51, there were, in addition, three small aneurysmal pouches just above the valves.

In 1, M 21, the murmurs were audible even in the femoral artery, and in this there was also an aneurysm of one of the pouches of Valsalva, pushing through the undefended spot to the surface of the tricuspid valve. In 1, M 58, there was in addition general adherent pericarditis.

*Mitral Disease*.—36 cases out of the 99 mitral stenosis. M 10, with 4 deaths. F 16, with 4 deaths. 1 case, F 18, had pneumonia while in the hospital, and recovered. 1, F 34, had tricuspid stenosis as well. 2 of the cases died with large infarcts in the lungs. In 2 of the cases of mitral incompetence, there were vegetations also on the tricuspid valve. 2 cases came in for severe hæmatemesis; F 46, with mitral stenosis; F 23, with mitral regurgitation. In 5 cases of mitral regurgitation, there was pericarditis as well.

*Fibroid Degeneration*.—A large patch at the apex of the left ventricle, M 71.

*Ulcerative Endocarditis*.—F 23 : First attack of rheumatic fever one year ago, breath short since; ten weeks in bed before admission with diarrhoea and sickness; systolic apex murmur and double aortic audible; pain in splenic region; great sickness. Post-mortem aortic valve found ragged and ulcerated; infarcts in the spleen. F 30 : Rheumatic fever when young; systolic apex murmur on admission, with pustular eruption. Post-mortem vegetation on mitral and aortic valves, and two little superficial ulcers on septum on left side. M 30 : Mitral and aortic murmurs, but varying much; large spleen; hæmaturia and pyuria. Temperature high; rigors, sweatings, and œdema.

*Aneurysm*.—F 33 : An aneurysm as large as the fist arose just above the aortic valves, but was entirely intrapericardial. The patient died of gangrene of the right lung. M 41 : The sac extended from the root of the aorta to the origin of the left subclavian. F 41 : An aneurysm, the size of a Tangerine orange, rose from the root of the aortic, and projected into the pericardium, resting on the right auricle. M 25 : A pulsating swelling close to heart on left side was at first thought to be an aneurysm, but proved to be a postmammary abscess, which burst of itself and got well.

*Aneurysm of the Abdominal Aorta*.—Pointing in the loin (M 61), was several times injected with glycerine of tannic acid without advantage. The skin ulcerated in the left lumbar region, and there were several smart hæmorrhages. The patient died suddenly one day, but not of hæmorrhage.

*Pneumonia.*—

*Right Apex.*—M 12, 2 died; F 6. 1 (M) developed a partial pneumothorax, which got quite well. Of the 2 fatal cases, 1 was an old, nearly cured empyema; the other had morbus cordis as well.

*Left Apex.*—M 7, 2 died; F 2, 1 died; 1 (M 3) had acute nephritis, followed by erysipelas shortly before the attack of pneumonia; 1 (M 5) developed during convalescence pleurisy of the corresponding base, which got well.

*Right Base.*—M 31, with 8 deaths; F 6. In 1 fatal case (M 21) the affected part of the lung gangrened.

*Left Base.*—M 41, with 4 deaths; F 12; 2 cases were followed by pleuritic effusion, with recovery.

*Whole Lung.*—Right in 3 children; left in 1 child and 1 adult.

*Double.*—Both bases. M 8, with 3 deaths; F 3, with 1 death. In 1 case (M 19) recovery took place from the pneumonia, but it was followed by empyema on the right side, that side first attacked with the pneumonia, which was tapped, and then an incision made. In 1 case (M 31) the left apex was first attacked, then the left base, and then the right base. In another (an infant) the right upper lobe was first affected, and then the left base. In the rest of the cases the parts affected were not stated.

*Pleuritic Effusion.*—Left side, 23 cases—M 13, F 10. Right side, 14 cases—M 13, F 1. 70 to 80 ozs. were removed by paracentesis on several occasions, and once (M 36) 100 ozs. of serum.

*Empyema.*—In 1 fatal case (M 3) it was double.

*Gangrene of Lung.*—M 36: Pneumothorax with half an ounce of purulent fluid was found post-mortem. The cause of the gangrene was not found.

*Stomatitis.*—F 4½: Had sloughing of mouth and lip following measles.

*Hæmatemesis.*—M 60: Had an aneurysm of the pancreatico-duodenal artery in the floor of an old ulcer. In F 55 the same artery was eroded, but there was no aneurysm.

*Intussusception.*—Probably 14 inches of ileum had been intussuscepted, and reduced by enemata, for the small intestine was inflamed and dusky red for that distance from the valve.

*Obstruction of Intestines.*—F 59: With internal strangulation, due to adhesion between intestine, 3 inches from valve, and uterus. M 30: With internal strangulation, due to adhesions starting from the seat of an old ulcer in the intestines.

*Malignant Disease of Large Intestine.*—All of rectum except 3. In 2 of these the new growth was in the sigmoid flexure; in the other, in the upper part of the ascending colon (M 55).

*Acute Peritonitis.*—In 4 fatal cases due to sloughing of vermiform appendix. In one an ilco-vesical fistula existed; a cavity containing pus communicated on one side with the ileum, about 8 inches from the valve, and on the other with the bladder: in the bottom of this cavity lay a plum-stone. In F 21 due to perfora-

tion of a gastric ulcer. Two cases followed parturition; in one craniotomy had been performed; one was caused by an abscess in the ovary. F 23: The peritonitis was suppurative, but no cause found.

*Cancerous Peritonitis*.—In 2 of the 3 cases secondary to cancer of the ovaries.

*Cirrhosis Hepatis*.—F 6: Probably due to drink, for father was a publican. In 2 cases there was profuse hæmatemesis, but both recovered. M 46: Possibly syphilitic, for there was extensive syphilitic necrosis of skull.

*Hydatid of Liver*.—M 46: Attacked  $3\frac{1}{2}$  years before with pain in epigastrium, vomiting, and jaundice, and was 3 weeks ill; 2 years before had a similar attack, and found a lump in the side; worse for 14 weeks before admission, and jaundice for 4 weeks. On the post-mortem there were 8 cysts on the liver, some gall-stained and decomposed, and some containing daughter cysts. F 69: Hydatid; had suppurated, and patient died.

*Biliary Colic*.—F 50: Died. Was extremely fat, and had before death complete suppression of urine; kidneys not granular.

*Cancer of Gall Duct*.—M 44 and F 63: Great thickening round the gall duct, which proved to be cancer on microscopical examination.

*General Malignant Disease*.—M 27: Case of multiple sarcomata in lungs and liver, and also in brain.

*Acute Nephritis*.—F 4: Died with double pleurisy and pericarditis, occurring shortly after scarlet fever.

*Granular Kidney*.—F 16: died with pericarditis and pleurisy. F 53: Died of pericarditis. Two cases (M 45, M 62) had chronic gout. M 43: Had phthisis also, but died of uræmia. M 46: Had profuse hæmatemesis, and recovered. M 49: Had erysipelas of head, and recovered.

*Renal Calculus*.—M 35: Died of suppression of urine.

*Bilharzia Hæmatobia*.—M 28: Was in Boer war from 1879 to 1881; probably caught the disease at the gold fields subsequently.

*Diabetes Mellitus*.—F 42: The sugar was only occasionally found. F 59: Admitted for pruritus vulvæ, and diabetes then found. Two cases (F 31, F 37) died of coma; both also had phthisis. M 32: Also died of coma. M 34: Died of pneumonia. F 28: Had acute nephritis, and died of uræmia.

*Diabetes Insipidus*.—M 43: Had lasted 3 years; 10 pints of urine daily; had lost  $2\frac{1}{2}$  stone in the last 2 years.

*Parametritis*.—F 29: Abscess discharged in inguinal region. F 27, F 28: Communication formed with bladder; and in one the bladder sloughed and the patient died.

*Eczema*.—F 17: The eczema and asthma began about the same time at 6 years of age, and has continued since, alternating, the eczema being bad when the asthma is better, and *vice versâ*.

*Erythema Nodosum*.—F 28: Had temporary albuminuria. F 28: Had a systolic apex murmur.



*Purpura*.—F 42: Had been attending a confinement 8 weeks before, and thought she got poisoned. The rash developed 4 weeks before admission. She was in the hospital 11 days and died unconscious.

*Leprosy*.—M 45: In India from 1862—1869; had ague there; 12 years ago had syphilis; since 1869 in Monmouthshire; 2 years ago illness commenced with dyspepsia; 1½ years ago hands and feet became dry, and the hair disappeared from the legs and arms, and lumps came above left elbow, which ulcerated; others came then on arm, face, hands, &c. In St. Thomas' Hospital from 1885 to 1886. Larynx affected then, and ulcer of palate. M 61: At 22 became a sailor, and was in Baltic for 5 years; since then a butcher in England. At 58 present affection began with anæsthesia of left hand and arm, and left foot and toes to knee. Gangrene then of tips of four fingers and great toe. 3 years ago the right hand, foot, and leg became similarly affected, and gangrene of finger and toes occurred. For 2 years unable to close right and left eyelids.

*Lead Poisoning*.—M 41: Had had wrist drop for 2½ years, and was subject to epilepsy and gout. He probably also had granular kidneys.

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SURGICAL REPORT.

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TABLE I. (continued).

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TABLE I. (continued).

DISEASE.	Total.		Discharged.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
DISEASES OF THE EYE (continued).																								
Retina, Optic Nerve, and Vitreous Humour—																								
Optic Neuritis	4	2	2	2	...	...	...	...	1	...	1	...	...	...	1	2	...	...	...	...	...	...	...	...
Optic Atrophy	2	1	1	1	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	1	...
Hyalitis	2	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Detached Retina	2	2	...	...	...	...	...	...	1	...	1	...	...	...	1	1	...	...	...	...	...	...	...	...
Retinitis	2	2	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Choroid—																								
Choroiditis	2	1	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...
General Affections of the Eye—																								
Glaucoma	21	7	14	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	3	5	...	...
Panophthalmitis	2	1	1	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
Asthenopia	3	1	2	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Atrophy of Globe	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...
Proptosis	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Sarcoma	7	2	5	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	3	...
Mucocoele	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Squint—																								
Internal	43	22	21	...	...	...	...	...	8	9	...	8	3	...	3	2	...	1	2	...	...	...	1	...
External	5	2	3	...	...	...	...	...	1	1	...	1	...	...	...	1	...	...	...	...	...	...	1	...
Paralytic Squint...	5	2	3	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	1	...	...	...

DISEASE.	Total.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
	Discharged.		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
	Discharged.	Died.																				
DISEASES OF THE EYE (continued).																						
Errors of Refraction—																						
<i>Astigmatism</i> ...	4	1	3	...	...	...	...	...	1	1	...	1	...	1	...	...	...	...	...	...	...	...
<i>Hypermetropia</i> ...	4	1	3	...	...	...	...	...	1	3	...	...	...	...	...	...	...	...	...	...	...	...
Diseases of the Lachrymal Apparatus—																						
<i>Dacryo-Cystitis</i> ...	9	...	9	...	...	...	...	1	...	1	...	1	...	2	...	1	...	2	...	1	...	...
<i>Lachrymal Abscess</i> ...	1	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
<i>Lachrymal Fistula</i> ...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Diseases of the Eyelids—																						
<i>Blepharitis</i> ...	2	...	2	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...
<i>Ectropion</i> ...	2	1	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
<i>Entropion</i> ...	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
<i>Tarsal Cyst</i> ...	8	5	3	...	...	...	...	1	...	...	...	...	1	...	...	...	...	2	1	...	...	...
<i>Rodent Ulcer</i> ...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...
<i>Papilloma</i> ...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
DISEASES OF THE EAR.																						
Purulent Catarrh ...	13	4	9	...	...	...	1	3	...	...	1	1	...	1	2	...	1	...	...	...	...	...
Deafness—																						
<i>Nervotic</i> ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...

TABLE I. (continued).

DISEASE.	Total.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
	Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
DISEASES OF THE RESPIRATORY SYSTEM.																				
Nose—																				
Epistaxis... ..	8	3	1	..	..	..	..	..	..	..	4	1	1	..	1	..	..	2	1	..
Ozena ... ..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
Deformed by Injury ...	4	4	..	..	1	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..
Septrum Deviated ...	7	1	..	..	..	..	..	2	1	..	4	..	..	..	..	..	..	..	..	..
Turbinate Bone Enlarged	2	2	..	..	1	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..
Mucous Lining Thickened	1	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
LARYNX—																				
Laryngitis—																				
Simple ... ..	4	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..
Syphilitic ... ..	1	..	1	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..
Tubercular ... ..	1	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	1	..
Abductor Paralysis ...	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ulceration of Cartilages.	1	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..
DISEASES OF THE VASCULAR SYSTEM.																				
Arteries—																				
Aneurysm—																				
Aorta ... ..	2	..	3	..	..	..	..	..	..	..	..	1	..	..	2	1	..	..	..	..
Axillary ... ..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..
Carotid... ..	2	1	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..
Innominate ... ..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..

TABLE I. (continued).

DISEASE.	Total.		Discharged.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.		
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
DISEASES OF THE VASCULAR SYSTEM (continued).																									
Arteries (continued)—																									
Aneurysm (continued)—																									
Popliteal ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Both Popliteals ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Circoid Aneurysm of Scalp... ..	1	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	
Veins—																									
Phlegmasia Alba ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Phlebitis and Thrombosis ...	15	1	14	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	
Varicose ... ..	12	5	7	...	...	...	...	...	...	...	...	...	...	1	...	3	2	...	...	...	...	...	...	...	
DISEASES OF THE DIGESTIVE SYSTEM.																									
Mouth—																									
Canerum Oris ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Hypertrophied Gums ...	4	1	3	...	...	...	...	...	...	...	...	...	...	1	3	...	...	...	...	...	...	...	...	...	
Randula ... ..	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Enlarged Tonsils ...	6	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Tonsillitis ... ..	8	3	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Salivary Fistula... ..	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Parotid Gland—																									
Parotitis ... ..	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	



TABLE I. (*continued*).

DISEASE.	Total.	Discharged.		Died.	Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.		
		Discharged.			Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		
		M.	F.		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
DISEASES OF THE DIGESTIVE SYSTEM ( <i>continued</i> ).																							
Tongue—																							
Abscess	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	
Acute Glossitis	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	
Tubercular Ulcer	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	
Simple Ulcer	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Pharynx—																							
Adenoid Vegetations	...	14	9	5	...	2	...	2	...	9	...	...	...	1	...	...	...	...	...	...	...	...	
Œsophagus—																							
Fibrous Stricture	...	1	...	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	
False Teeth Swallowed	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	
Intestines—																							
Hernia—																							
Reducible—																							
Inguinal	...	8	...	...	2	...	...	...	...	...	...	...	2	...	...	...	1	...	...	3	...	...	
Femoral	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	
Umbilical	...	4	...	4	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	
Ventral	...	2	1	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	
Irreducible—																							
Inguinal	...	12	10	2	...	...	...	...	...	...	...	...	3	...	4	...	3	...	...	...	...	...	
Femoral	...	6	...	6	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	
Umbilical	...	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	



TABLE I. (continued).

DISEASE.	Total.		Discharged.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.		
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
<b>DISEASES OF THE DIGESTIVE SYSTEM (continued).</b>																									
<b>Rectum and Anus (cont.)—</b>																									
<i>Hæmorrhoids</i> ...	47	33	14	...	...	...	...	...	...	...	...	...	1	...	8	1	...	9	7	...	7	4	...	8	...
<i>Fibrous Stricture</i> ...	7	2	5	...	...	...	...	...	...	...	...	...	...	...	...	3	...	2	...	1	...	1	...	1	1
<i>Ulcer of Rectum</i> ...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
<i>Recto-Vaginal Fistula</i> ...	3	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	1
<i>Recto-Vesical Fistula</i> ...	3	3	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...
<b>DISEASES OF THE GENITO-URINARY ORGANS.</b>																									
<b>Bladder—</b>																									
<i>Bilharzia</i> ...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
<i>Calculus</i> ...	6	6	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	1
<i>Cystitis</i> ...	5	4	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
<i>Irritable Bladder</i> ...	2	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
<i>Tubercular Disease</i> ...	4	3	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
<i>Vesico-Vaginal Fistula</i> ...	3	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
<b>Kidney—</b>																									
<i>Calculus</i> ...	3	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
<i>Hydro-Nephrosis</i> ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
<i>Morbid Kidney</i> ...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
<i>Perinephritic Abscess</i> ...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
<i>Pyo-Nephrosis</i> ...	4	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

TABLE I. (continued).

DISEASE.	Total.	Discharged.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		Over 60.	
		M.	F.	M.	F.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
DISEASES OF THE GENITO-URINARY ORGANS (cont.)																					
Kidney (Continued)—																					
Renal Colic ...	3	2	...	...	...	...	...	...	...	1	...	...	...	1	2	...	...	...	...	...	...
Tubercular Disease ...	3	1	...	1	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...
Chronic Nephritis ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Prepuce—																					
Balanitis ...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Prostate—																					
Hypertrophied ...	11	9	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	8	2
Scrotum—																					
Edema ...	2	2	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
Spermatic Cord—																					
Encysted Hydrocele ...	3	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Varicoele ...	15	15	...	...	...	...	...	...	...	...	...	8	...	6	...	...	...	...	...	1	...
Testis—																					
Abscess ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Orchitis and Epididymitis ...	3	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Retained ...	3	3	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...
Tubercular and Strumous ...	7	7	...	...	...	...	...	1	...	...	...	...	...	4	...	1	...	...	...	...	...



TABLE I. (continued).

DISEASE.	Total.	Discharged.		Died.	Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.		
		Discharged.			Died.	Discharged.		Died.	Discharged.		Died.	Discharged.		Died.	Discharged.		Died.	Discharged.		Died.	Discharged.		Died.
		M.	F.			M.	F.		M.	F.		M.	F.		M.	F.		M.	F.		M.	F.	
RESECTION.																							
DISEASES OF THE GENITO-URINARY ORGANS (cont.)																							
Tunica Vaginalis—																							
Hydrocele...	17	17	...	...	1	...	3	...	...	...	5	...	3	...	2	...	1	...	1	...	1	...	
Hydrocele of Hernial Sac	1	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	
Hæmatocele ...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	
Urethra—																							
Calculus ...	3	3	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Fistule ...	4	4	...	...	...	...	...	...	...	...	...	...	1	...	1	...	2	...	...	...	...	...	
Hæmorrhage from	1	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	
Stricture—																							
Simple ...	86	79	...	7	...	...	...	...	...	...	...	...	11	1	30	20	1	12	1	6	2	...	
Traumatic	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Ulceration	1	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	
Urethritis	1	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	
Urine and Urination—																							
Dysuria ...	1	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Ectoparasitation	3	1	...	2	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	1	
Hæmaturia	14	10	4	...	...	...	1	...	...	...	1	...	2	3	...	...	...	4	...	3	...	...	
Incontinence	10	6	4	...	...	...	2	1	...	1	...	...	...	...	1	1	...	1	1	...	...	...	
Retention...	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	
Tuberculosis of Genito-Urinary Tract																							
Urinary Tract ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	



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[illegible]





TABLE I. (continued).

DISEASE.	Total.		Discharged.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
DISEASES OF THE ORGANS OF LOCOMOTION ( <i>cont.</i> )																								
Joints ( <i>continued</i> )—																								
Charcot's Disease—																								
Hip ... ..	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Knee ... ..	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chronic Strumous or Tubercular Disease—																								
Ankle ... ..	15	7	7	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Elbow ... ..	19	12	5	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hip ... ..	60	32	20	4	4	2	...	12	8	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Knee... ..	53	27	25	1	...	...	...	4	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Phalangeal Joints ... ..	1	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sacro-Iliac ... ..	5	1	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sterno-Clavicular ... ..	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tarsal Joints ... ..	8	6	2	...	...	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Toe Joints ... ..	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Wrist... ..	9	2	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ganglionic Disease ... ..	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hysterical Contraction—																								
Knee ... ..	2	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Internal Derangement—																								
Knee ... ..	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Loose Bodies in Joints ... ..	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...



[illegible]

TABLE I. (continued).

[illegible]





TABLE I. (continued).

DISEASE.	Total.	Discharged.		Died.	Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		Over 60.		
		M.	F.		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
																					Discharged.
DISEASES OF THE CUTA- NEOUS SYSTEM.																					
Boil ...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Carbuncle ...	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Eczema ...	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Erythema Nodosum ...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Molluscum Contagiosum ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Pemphigus ...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Purpura ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Tinea Tonsurans ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Urticaria Pigmentosa ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Nails—																					
Onychia ...	2	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Ingraving Toe-Nail ...	27	20	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Lupus ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Face ...	32	7	25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Arm ...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Sinuses ...	16	10	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Ulcers—																					
Chronic ...	17	9	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Hemorrhage ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Simple ...	10	6	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Sloughing ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Perforating ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Varicose ...	4	1	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	

[illegible]

TABLE I. (continued).

INJURY.	Total.		Discharged.		Died.	Under 5.	— 10.	— 15.	— 20.	— 30.	— 40.	— 50.	— 60.	Over 60.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
INJURIES OF THE HEAD AND FACE ( <i>continued</i> ). Fractures— Simple— Base of Skull ... Vertex of Skull ... Malar Bone ... Inferior Maxilla ... Temporal Bone ( <i>with</i> <i>Facial Paralysis</i> ) ... Nasal Bones ... Compound— Skull— ( <i>Without Depression</i> ) ( <i>With Depression</i> ) ... Nasal Bones ... Jaw ... Dislocation— Lower Jaw ...	6 5 1 1 6 1 5 7 3 1 1 1 1	4 1 1 3 1 ... ... 3 1 1 ... ... 1	2 3 1 1 ... ... ... 1 1 1 1 ... ...	... ... ... ... ... ... ... ... ... ... ... ... ... ...	... ... ... ... ... ... ... ... ... ... ... ... ... ...	1 1 ... 1 ... 1 ... 1 ... ... ... ... ... ...	... ... ... ... ... ... ... ... ... ... ... ... ... ...	... ... ... ... ... ... ... ... ... ... ... ... ... ... ...	... ... ... ... ... ... ... ... ... ... ... ... ... ... ...	... ... ... ... ... ... ... ... ... ... ... ... ... ...	... ... ... ... ... ... ... ... ... ... ... ... ... ...	... ... ... ... ... ... ... ... ... ... ... ... ... ...	... ... ... ... ... ... ... ... ... ... ... ... ... ...	... ... ... ... ... ... ... ... ... ... ... ... ... ...
INJURIES OF ABDOMEN. Contusions ... Wound of Abdominal Wall. Wound of Abdominal Cavity Liver Ruptured ... Kidney Ruptured ...	12 2 1 2 1	11 2 1 ... ...	... ... ... ... ...	... ... ... ... ...	... ... ... ... ...	1 ... ... ... ...	1 ... ... ... ...	3 1 ... ... ...	4 1 ... ... ...	... ... ... ... ...	... ... ... ... ...	2 ... ... ... ...	... ... ... ... ...	... ... ... ... ...



[illegible]

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## APPENDIX TO TABLE I.

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### GENERAL DISEASES.

#### *Anthrax.*

The patient was a butcher, aged 30, who was admitted, in a dying condition, with an anthrax pustule on the neck. He died in a few hours, and a post-mortem examination showed numerous anthrax bacilli in the tissues around the pustule, though there were no internal lesions.

#### *Gangrene.*

In the case of senile gangrene which recovered, amputation was performed in the upper third of the leg.

A case of dry gangrene of the thumb resulted from the application of an elastic ligature during the performance of an operation at another hospital.

#### *Diphtheria.*

Only those cases on which operations were performed are included. The other cases will be found in the Medical statistics.

### TUMOURS.

The two cases of sarcoma of the bladder each occurred in men. In one case the growth was removed, and a year later the patient remained well (see *Lancet*, 1886, vol. i., p. 737). In the other case the patient died of pyelonephritis.

The case of sarcoma of the tongue has been already described in the *Lancet* for 1887, vol. i., p. 623.

The case of pulsating fibro-sarcoma is the same as that alluded to on page 75 of last year's Surgical Report. After amputation the growth was found to be a periosteal fibro-sarcoma, with numerous blood-vessels.

In two cases of dermoid cyst the tumour was situated in the floor of the mouth, one patient being a lad of 17, the other a girl of 21.

The patient who died with a thyroid cyst was a man aged 41, who was subjected to an operation for removal of the tumour. Part only of the cyst could be removed, and the suppuration which ensued opened into the trachea, and resulted in fatal broncho-pneumonia.

The two cases of adeno-fibroma of the palate have been described by Mr. Stephen Paget in the Transactions of the Pathological Society for the current year.

Of 21 cases of adeno-fibroma and adeno-sarcoma of the breast, 9 were cystic, and 12 solid throughout.

Of two cases of congenital osteo-chondroma, one, situated in the substance of the erector spinæ, was removed, the other, attached to the ribs, was not interfered with.

The congenital lipoma of the femur occurred in a boy aged 9 years, and extended almost the whole length of that bone. It was satisfactorily removed. Only those ovarian cysts which were submitted to operation are included in this table. The others are tabulated in Table I. of the Medical statistics.



## DISEASES OF THE DIGESTIVE SYSTEM.

The case of hernia, with sloughing of the ventral wall, occurred in a newly-born infant, and resulted from ulceration around the umbilical cord. An attempt was made to cover in the intestines by a plastic operation, but the child died in 36 hours.

One patient, with ulcer of the colon, was admitted on account of a large abscess in the right side, pointing between the eighth and ninth ribs in the axillary line. It was opened, and continued to discharge large quantities of pus until the patient died of amyloid disease five months later. A post-mortem examination showed a small circular ulcer in the ascending colon, which had penetrated into the tissues in the loin, and started the suppurative process. There was no evidence as to the origin of the ulcer, and the rest of the intestines were healthy.

Both cases of intestinal obstruction were probably the result of cancerous growths in the large intestine. Each was treated by colotomy.

## DISEASES OF THE GENITO-URINARY ORGANS.

### *Bilharzia.*

This occurred in a woman aged 52, who had lived for several years in South Africa.

Of the six fatal cases of stricture four were complicated by extravasation of urine, one by vesical calculus and epithelioma, and one by general tuberculosis.

## DISEASES OF THE ORGANS OF LOCOMOTION.

One patient, a boy of 7, died of pyæmia after an operation for removal of dead bone from the femur and tibia.

A patient, aged 23, died of necrosis of the ilium complicated by hip disease and general tuberculosis.

A girl, aged 3, died of pyæmia complicating acute periostitis of the tibia.

A lad, aged 15, admitted for strumous disease of the elbow, complicated by similar disease of the wrist and ankle joints, died of general tuberculosis.

A man of 65, admitted for a similar affection, died of heart disease and granular kidneys.

Of four males who died from hip disease, in two excision had been performed. One of these patients died of acute tuberculosis.

Of four females who died from hip disease, in two amputation had been performed.

The only patient suffering from disease of the knee-joint who died was a woman, aged 44. The disease was complicated by extensive necrosis of the femur and much suppuration, with advanced interstitial nephritis. Death followed, two days after amputation of the thigh in the middle third.

Acute suppurative arthritis followed contusion of the knee in a lad, aged 9. Recovery, with a movable joint, followed free incisions and drainage.

A male child, aged 4, was admitted suffering from myositis ossificans. The muscles of the scapula, neck, shoulders, and pectoral regions were chiefly affected. The disease appeared to be of congenital origin.

A young man of 21, admitted for scar contraction of the fingers following injury, died of pyæmia after the performance of a plastic operation.

## DISEASES OF THE CELLULAR TISSUE.

Of the five patients who died from abscesses, one was a rachitic infant of 9 months, in whom collapse of the lungs was found on post-mortem examination; two were men of 42 and 44 respectively, who died from prolonged supuration in connection with gluteal abscesses; and one was a man of 63, who died from erysipelas complicating an anal abscess. The last was a lad of 20, who was admitted with an abscess in the iliac region complicating gonorrhœa. The abscess was opened, and for several days all went well. Sudden and profuse hæmorrhage then ensued, and was arrested by firm plugging and pressure. For another week there was no more hæmorrhage, and the patient seemed to be progressing favourably, although he was very feeble. Another sudden hæmorrhage now ensued; the wound was enlarged, and the circumflex iliac artery was found ulcerated and bleeding. The vessel was ligatured, but the lad failed to rally, and died seventeen days after admission.

## DISEASES OF THE CUTANEOUS SYSTEM.

A man, aged 50, died of carbuncle of the neck complicated by chronic interstitial nephritis.

A woman, aged 44, was admitted in a dying condition with a large carbuncle of the lip. A post-mortem examination did not reveal any abnormal condition of the veins of the face, or of the cranial contents, but the lungs contained numerous septic emboli and subpleural abscesses.

A man, aged 58, was admitted with a large chronic ulcer and erysipelas of the leg. He died in six days.

A brewer's drayman died from gangrene of the foot, following a perforating ulcer of the ball of the great toe. The patient was the subject of diabetes. The foot was amputated at the ankle-joint some weeks before his death.

## INJURIES OF THE HEAD AND FACE.

A man, aged 31, was admitted with delirium tremens following a fall on the face. He died, and a post-mortem examination showed advanced disease of the liver and kidneys.

A porter, aged 50, died of erysipelas which complicated a scalp wound.

A woman aged 50, died of the same disease complicating a similar injury. She had advanced disease of the heart and liver.

A cabman, aged 57, was admitted into the hospital suffering from slight concussion of the brain. He walked into the ward, and was undressing himself, when he suddenly became insensible, and rapidly passing into a comatose condition, died in an hour. A post-mortem examination showed a small tear in one of the branches of the right middle cerebral artery, and a large effusion of blood in the subarachnoid space.

A case of fracture of the middle fossa of the skull proved fatal on the fourteenth day from the development of an abscess in the cerebellum.

A child, aged 3, died of bronchitis complicating a fractured jaw.

## INJURIES OF THE THORAX.

A man of 73 died of pneumonia following fracture of the ribs; and a man of 62 of bronchitis following a similar injury.

## INJURIES OF THE UPPER EXTREMITY.

A man, aged 27, was admitted four hours after having been bitten in the hand by a viper whilst gathering flowers. The injury was followed by great swelling of the whole upper extremity, succeeded by ecchymosis, extending as far as the thoracic wall. The arm was enveloped in ice and lotio plumbi, and the patient treated with stimulants. He made a good recovery.

A man of 44 died of heart disease three days after a wound of the elbow-joint.

A man of 72 died of surgical kidneys and enlarged prostate a week after sustaining a fracture of the surgical neck of the humerus.

A platelayer, aged 30, died a few hours after double primary amputation performed for compound fractures of the humerus and femur.

A man, aged 50, admitted with a compound fracture of the humerus, died in nine days from ulceration of the intestine and peritonitis, which apparently resulted from contusion at the time of the accident.

An old woman of 64 died from exhaustion following suppuration around a compound fracture of the humerus, and a severe laceration of the foot.

## INJURIES OF THE LOWER EXTREMITY.

A man, aged 24, died of spreading septic gangrene extending from a lacerated wound of the leg.

Four old women died of congestion of the lungs and bronchitis complicating fractures of the femur.

Two men died of compound fractures of both thighs caused by railway trains.

A woman, aged 53, died of acute bronchitis after a compound fracture of the tibia.

A man of 80 died from exhaustion a week after a compound fracture of the os calcis.

A man of 72 died of exhaustion a week after primary amputation of the foot for compound fracture.

In two cases of dorsal dislocation of the hip reduction was readily effected by manipulation.

A man of 36, with dislocation of the knee backwards and outwards, died of moist gangrene, resulting from a severe compound fracture of the other leg.

## SURGICAL OPERATIONS PERFORMED:

[illegible]



TABLE II. (continued).

[illegible]

OPERATIONS.	AGE AND SEX.															
	TOTAL.		Discharged		Died.		Under 5 Years.		— 10.		— 20.		— 30.		— 40.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
OPERATIONS ON BONES.																
Osteotomy—																
Femur—																
( <i>McEwen's for Genu</i>	16	4	15	4	1	...	5	...	6	2	5	2	...	...	...	...
<i>Valgum</i> ) ...	...	1	...	1	...	...	...	1	...	...	...	1	...	...	...	...
( <i>For Genu Varum</i> )	2	...	2	...	...	...	...	...	1	...	...	...	...	...	...	...
( <i>Neck</i> ) ...	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...
( <i>Below Trochanter</i> )	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tibia ...	1	1	1	1	...	...	1	...	...	1	...	...	...	...	...	...
Tarsus ...	2	...	2	...	...	...	...	...	1	...	1	...	...	...	...	...
For Hallux Valgus	...	1	...	1	...	...	...	...	...	...	...	...	1	...	...	...
Carious Bone Gouged—																
Sacro-Iliac Joint	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...
Tarsus ...	...	1	...	1	...	...	...	...	...	1	...	...	...	...	...	...
Temporal ...	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...
Tibia ...	1	2	1	2	...	...	...	...	...	1	...	1	...	...	...	...
Removal of Sequestra—																
Bones of Hand and Foot.	5	...	5	...	...	...	...	...	2	...	1	...	1	...	1	...
Clavicle ...	...	1	...	1	...	...	...	...	...	...	...	...	1	...	...	...
Femur ...	5	2	4	2	1	...	1	...	2	1	2	...	...	1	...	...
Humerus ...	1	1	...	1	...	...	...	...	...	...	1	...	...	...	...	...
Jaw ...	4	4	4	4	...	...	...	...	2	1	1	...	...	1	...	...
Mastoid ...	4	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Rib ...	1	1	1	1	...	...	2	...	...	...	...	...	...	...	...	...
Tibia ...	6	1	6	1	...	...	...	...	...	...	3	1	...	...	2	...



TABLE II. (continued).

OPERATIONS.	AGE AND SEX.															
	Total.		Discharged		Died.		Under 5 Years.		— 10.		— 20.		— 30.		— 40.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
AMPUTATIONS (continued).																
Primary (continued)—																
Forearm—																
Upper Third—																
(For Compound Frac-																
ture of Radius and																
Ulna) ... ..	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...
Middle Third—																
(For Lacerated																
Wound) ... ..	2	...	2	...	...	...	...	...	...	...	2	...	...	...	...	...
Fingers ... ..	7	...	7	...	...	...	...	...	1	...	2	...	...	...	...	...
Thigh (Lower Third) and																
Leg (Upper Third)—																
(For Compound Frac-																
ture) ... ..	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Thigh—																
Upper Third—																
(For Compound Frac-																
ture) ... ..	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...
Leg—																
Lower Third—																
(For Compound Frac-																
ture) ... ..	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Foot—																
Syme's—																
(For Compound Frac-																
ture) ... ..	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...



TABLE II. (*continued*).

OPERATIONS.	AGE AND SEX.													
	TOTAL.		Discharged.		Died.		Under 5 Years.		— 10.		— 20.		— 30.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
AMPUTATIONS ( <i>continued</i> ).														
Scapular—														
Forearm—														
Upper Third—														
(For Burn) ...	...	1	...	1	...	...	...	...	...	...	...	...	...	...
Leg—														
Upper Third—														
(For Compound Frac-														
ture) ...	2	...	2	...	...	...	...	...	...	...	...	...	...	...
Fingers ...	3	...	3	...	...	...	...	...	...	...	...	...	...	...
For Disast—														
Ankle—														
(a) (For Disease of														
Ankle and Tarsus)—														
Pirouette's ...	2	...	2	...	...	...	...	...	...	...	...	...	...	...
Boer's ...	1	...	1	...	...	...	...	...	1	...	...	...	...	...
Synov's ...	2	...	2	...	...	...	...	...	1	...	...	...	...	...
Tal's ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
(b) (For Diabetic (an-														
gine)—														
Synov's ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...
Arm—														
Middle Third—														
(For Disast Elbow)	3	...	3	...	...	...	...	...	...	...	...	...	...	...
Lower Third—														
(For Recurrent Sur-														
gery) ...	1	...	...	...	...	...	...	...	1	...	...	...	...	...

TABLE II. (continued).

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[illegible]



TABLE II. (continued).

[illegible]









TABLE II. (continued).

OPERATIONS.	Total.		Discharged.		Died.		Under 5 Years.		— 10.		— 20.		— 30.		— 40.		— 50.		— 60.		— 70.		Over 70.			
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.		
	AGE AND SEX.																									
OPERATIONS ON HERNIE																										
(continued)																										
Operation for Hernia of Stomach peritoneal Fat ... ..	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...		
(COLOMOTOMY—																										
For Carcinoma of Rectum...	1	8	1	5	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	1	3	...	...	...		
GASTROSTOMY ... ..	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
LITTRE'S OPERATION FOR IM- PERFORATE ANUS...	1	..	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
TRACHEOTOMY—																										
For Simple Laryngitis ... ..	2	...	2	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...		
For Syphilitic Laryngitis ... ..	2	1	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...		
For Malignant Growth ... ..	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...		
For Diphtheria ... ..	11	13	4	3	7	10	9	2	4	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...		
OVARIGTOMY—																										
(For Ovarian Cysts) ... ..	10	...	8	...	...	2	...	...	...	...	...	1	...	2	...	...	...	3	...	2	...	1	...	...		
(For Parovarian Cysts) ... ..	2	...	1	...	...	1	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...		
OOPHOECTOMY—																										
(For Fibroid) ... ..	1	...	1	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...		
Suppurating Ovarian Cysts Drained ... ..	3	...	2	...	...	1	...	...	...	...	...	...	...	1	...	1	...	...	...	1	...	...	...	...		
Ovarian Cysts Tapped ... ..	3	...	2	...	...	1	...	...	...	...	...	...	...	...	2	...	...	...	...	1	...	...	...	...		



## STATISTICS OF ANÆSTHETICS.

During the year 1886 Anæsthetics were administered 3,486 times.

Chloroform	...	...	...	...	...	...	1,425	times.
Gas	...	...	...	...	...	...	385	„
Ether	...	...	...	...	...	...	1,109	„
Gas and Ether	...	...	...	...	...	...	567	„
							<u>3,486</u>	

One man, æt. 26, who was much weakened by a suppurating kidney, died during the administration of chloroform, which was given in order to allow an examination of a sinus in the loin. The patient was seized with syncope before anæsthesia was complete, and died in a few minutes. A post-mortem examination was not permitted.

## APPENDIX TO TABLE II.

### PLASTIC OPERATIONS.

A man of 21 was admitted suffering from a recto-vesical fistula of two years' standing which had followed the operation of lateral lithotomy. It was much improved, but not quite closed, by paring the edges and uniting them.

A lad of 16 underwent a similar operation with much benefit for a fistula of ten years' standing, which also resulted from lateral lithotomy.

A stonemason, aged 21, died of pyæmia nine days after a plastic operation for the relief of a contracted ring and little fingers.

An infant of 3 days was admitted with sloughing of the abdominal walls and a ventral hernia. A circular portion of the abdominal wall was excised, and the aperture closed by suture, but the patient died of peritonitis within a few hours.

### EXCISIONS.

A boy of 13, who suffered from hip disease with much suppuration, died from acute general tuberculosis thirty days after excision of the hip joint.

A man, aged 33, also died with symptoms of general tuberculosis on the twenty-fourth day after excision performed for hip disease. In this case a post-mortem examination was not permitted.

One half of the inferior maxilla was excised for a recurrent multilocular cystic tumour. The patient was a woman, aged 29, on whom an operation for local removal had been performed five years previously. The case is described in the current volume of the Transactions of the Pathological Society.

In the case of a woman, aged 31, the scapula was excised for a round-celled sarcomatous growth which had been noticed by the patient for two months, and was of considerable size. Seven months later there was no appearance of any recurrence.

### OPERATIONS ON BONES.

#### *Osteotomy.*

McEwen's operation on the femur was performed in thirteen cases on both limbs. Of these the wounds suppurated in three patients, aged respectively 8, 15, and 18.

In seven cases the operation was performed on one femur only.

One patient of 18, on whom the double operation was performed, died of profuse suppuration eleven weeks later.

#### *Sequestrotomy.*

A lad, aged 7, died of pyæmia seven days after an operation for the removal of dead bone from the tibia and femur.

## OPERATIONS ON JOINTS.

The table does not include cases in which suppurating joints were incised.

## AMPUTATIONS FOR INJURY.

### *Primary.*

A man, aged 35, died two hours after amputation of the right thigh and arm in the upper thirds. He had been injured by a railway train.

A man of 72 died eight days after primary amputation of the leg for compound fracture. Death was apparently due to exhaustion, for he never quite rallied from the shock of the accident.

A man, aged 33, made a good recovery after amputation of the left leg in the upper third, and the right thigh in the lower third. He was the subject of syphilis, and had a copious syphilitic eruption when admitted.

## AMPUTATIONS FOR DISEASE.

*Ankle Joint.*—A brewer's labourer, aged 44, was admitted with a perforating ulcer of the ball of the great toe, and some gangrene spreading to the surrounding structures. His urine contained much sugar. Amputation by Syme's method was adopted, but the flaps became gangrenous and the patient sank and died on the twenty-sixth day after the operation. No post-mortem examination was allowed.

*Arm.*—A lad, aged 18, was admitted on December 7th, 1885, for a recurrent oval-celled sarcoma on the back of the left wrist. The original tumour had been locally removed eight months previously. Amputation was performed in the lower third of the arm, and three weeks later some diseased glands were removed from the axilla. The patient made a good recovery from the operations, but died three months later from secondary growths in the axilla, pleura, lung, and buttock. The stump at the time of the patient's death was quite sound, and free from disease.

*Forearm.*—A man of 64 died four weeks after amputation in the upper third of the forearm, performed on account of phlegmonous erysipelas with sloughing. He was in an exceedingly feeble state at the time of the amputation, and died of exhaustion.

In the case of a blacksmith, aged 46, the forearm was amputated in its upper third for an endosteal myeloid sarcoma of the lower third of the radius. He made a good recovery, and was free from all recurrence a year later.

*Hip.*—Two out of the three patients operated upon died: one in three and a half hours from shock; the other in six weeks from continued suppuration due to an extension of a pelvic abscess into the rectum.

*Thigh.*—A man, aged 40, whose case was mentioned at p. 75 of the Surgical Report for last year, was readmitted for a pulsating tumour of his thigh. Amputation was performed in the middle of the thigh, and the patient made a good recovery. An examination of the limb after removal showed a large, soft, fleshy growth springing from the periosteum on the inner and posterior aspects of the femur. An irregular projection of bone grew into the tumour from the adductor tubercle. There was no expansion of the bone, and the latter was in no way infiltrated by the growth. Microscopically examined, the tumour was found to be composed of a fibrous stroma with numerous spindle cells—a fibro-sarcoma. The growth had existed for seven years.

In the case of a girl, aged 23, amputation through the thigh was performed on account of ankylosis and inability to use the limb. The patient had undergone an operation for the removal of a loose cartilage from the knee joint nine months before her admission, and the operation had been followed by suppurative arthritis.

## OPERATIONS ON THE BREAST.

Three women, aged respectively 46, 60, and 67, died after amputation of the breast and removal of the axillary glands for carcinoma. The first patient died on the twenty-third day after the operation. The wound had suppurated, and for the first fortnight the temperature had been over  $100^{\circ}$ ; on the fifteenth day delirium set in and continued without intermission until death resulted from exhaustion; for the week previous to death the temperature ranged from  $99^{\circ}$  to  $100.5^{\circ}$ , but on one occasion rose to  $103^{\circ}$ . The wound was dressed with carbolised oiled lint. A post-mortem examination did not reveal any cause of death, the viscera being healthy.

One patient aged 60 died on the seventh day after operation from erysipelas.

A woman of 67 died on the eighth day after operation. Her urine contained much albumin and some pus. The temperature was not raised after the operation, and the wound healed well. Death appeared to result from the renal disease, and no post-mortem examination was permitted.

A feeble old woman of 65 died of bronchitis on the sixteenth day after the local removal of a small cancerous nodule.

In two patients tumours were removed by Bougard's paste, and in one by electrolysis.

## REMOVAL OF TUMOURS.

A man, aged 45, died after the removal of a thyroid cyst. Death resulted from extension of suppuration from the cyst cavity to the trachea, the pus being taken into the lungs and causing septic pneumonia.

A large lipoma was removed from the thigh of a lad aged 9. It was attached to the periosteum, and was of congenital origin.

An alveolar sarcoma was removed from the bladder by an opening in the middle line of the perineum. The patient remained quite well one year later. The case is described in detail in the *Lancet*.

## OPERATIONS ON THE TONGUE.

All the patients subjected to operations on the tongue recovered. The patient who died after division of the gustatory nerve succumbed to an extension of an epithelioma to the floor of the mouth and larynx.

## OPERATIONS ON TENDONS.

The child who died after tenotomy for talipes died from diphtheria.

## LIGATURE OF ARTERIES IN CONTINUITY.

An old soldier, aged 43, was admitted with a pulsating swelling on the left side of the neck, just above the sterno-clavicular joint. He had noticed the swelling only sixteen days, and said it was quickly increasing. The case was considered to be one of carotid aneurysm, and was treated by ligature of the common carotid on the distal side of the aneurysm. The vessel was tied in two places, and divided between, and was then found to be already occluded by clot. As the aneurysm continued to increase in size, three months later an attempt was made to pass some horsehair into the sac. On puncturing it with a trocar and canula, however, no blood escaped, and no horsehair could be introduced. The patient then left the hospital for a time, but returned in a few weeks on account of severe hæmorrhage, due to the sac giving way. He died seven days later, and a post-mortem examination showed that the aneurysm was not of carotid origin, but sprang from the aorta, the whole aortic arch being much dilated.

A sailor, aged 59, was admitted with an aneurysm at the root of the neck on the right side. It was considered to be an aneurysm of the innominate, and was treated by ligature of the right common carotid artery in two places with



carbolised silk, the artery being divided between the ligatures. For some days the patient did very well, but on the eighth day after the operation his vision became dim on the right side, and three days later he became quite blind in the right eye. He was now much troubled with cough and sleeplessness, with some bronchitis and cedema of the lungs. Three weeks after the operation the wound was still suppurating, and on the twenty-first day there was slight secondary hemorrhage. The aneurysm meanwhile increased in size, and evidently was extending within the thorax also. On the twenty-ninth day after the operation he sank and died. A post-mortem examination showed that the aneurysm was of aortic origin, the innominate being quite healthy. The aneurysmal sac had compressed the trachea, lung, and right pneumogastric nerve. The carotid at the seat of ligature was open, and not filled with clot. The silk ligature lay loose in the wound.

A compositor, aged 38, was admitted for double popliteal aneurysm. He had been an active man, given to athletic pursuits, but had suffered from syphilis ten years previous to his admission into the hospital. The aneurysmal sac on each side was very thin, and four days after his admission that in the right ham began to leak, and the aneurysm rapidly increased in size. The superficial femoral artery was at once ligatured at the apex of Scarpa's triangle, the vessel being tied in two places with kangaroo tendon ligature, and divided between. Six days later the other aneurysm showed signs of becoming diffused, and the left superficial femoral was at once treated in a similar manner. The patient made an excellent recovery.

The subclavian artery was ligatured in two places with kangaroo tendon, and divided between the ligatures, in the case of a carman, aged 52, who was admitted for an axillary aneurysm. The upper ligature slipped off within half-an-hour of its application, and the patient lost so much blood before the vessel was again secured, that he died six hours later. The case is recorded in the Transactions of the Clinical Society for 1886—1887.

In the case of a carpenter, aged 38, who was admitted for an aneurysm in the popliteal space, the operation of ligature of the popliteal was performed instead of the more ordinary one of ligature of the superficial femoral. The vessel was tied in two places with kangaroo tendon, and divided between the ligatures; at this spot it appeared quite healthy. The patient made a rapid recovery.

## OPERATIONS ON THE GENITO-URINARY ORGANS.

### *Median Lithotomy.*

This operation was performed, in one case of stricture of the urethra, with an impacted urethral calculus and a calculus in the bladder.

### *Suprapubic Lithotomy.*

In one case, in a soldier aged 43, for a stone weighing  $24\frac{1}{2}$  ozs., and composed chiefly of oxalate of lime. He made a good recovery, but returned to the hospital fifteen months later on account of a urinary fistula having opened at the seat of operation (*see Lancet*, vol. ii., 1886, p. 244).

A lad, aged 16, who had been cut for stone by the lateral operation six years previously, was operated upon by the suprapubic method, three small uratic calculi being removed. The largest stone weighed  $\frac{3}{4}$  oz. The wound in the bladder was closed by sutures, but urine escaped on the third day, and continued to pass for five weeks. The patient ultimately made a good recovery.

### *Nephrotomy.*

A man, aged 26, died during the administration of an anæsthetic (*see Statistics of Anæsthetics*, page 96).

### *Nephro-Lithotomy.*

A coachman, aged 49, was admitted with a swelling in the region of the left kidney, and a history of pain and hæmaturia for two or three years. An

exploratory nephrotomy had been performed at another hospital eighteen months previously, no stone being detected. A month after his admission nephrotomy was performed by an incision through the anterior abdominal wall, the peritoneum being incised. A calculus was detected, and removed from the pelvis. The operation was followed by suppression of urine, and death ensued in twenty-eight hours. A post-mortem examination showed chronic tubular nephritis of the right kidney. The left kidney was shrunken and indurated.

A schoolboy, aged 15, was admitted with symptoms of renal calculus, which had lasted at intervals for ten years. He had renal colic and hæmaturia, but no swelling in either lumbar region. The abdomen was opened in the middle line, and a stone was detected in the pelvis of the left kidney. Another incision was then made in the loin, and the kidney was exposed. The calculus, however, slipped out of the pelvis, and could not again be discovered. The operation was a prolonged one, and the patient suffered much from shock. He never thoroughly rallied, and died in forty-eight hours. A post-mortem examination showed slight peritonitis. The left kidney contained two calculi, one the size of a split pea, the other about three times that size. The pelvis and calices were a little dilated. The stones were found at the top of one of the calices, but could not be felt until the kidney was incised. The right kidney was healthy.

A married woman, aged 42, was admitted with pyo-nephrosis. An incision revealed a dilated kidney, and on opening the latter a calculus was found, and removed from the orifice of the ureter. The patient made a good recovery.

#### *Nephrectomy.*

This operation was performed on a married woman, aged 31, on account of a swelling in the right loin with pyuria. An incision was made vertically upwards from the anterior superior iliac spine, the peritoneum was opened, and a tubercular kidney was removed. The operation was rendered very difficult by the numerous and firm adhesions. The peritoneal wound was closed. The operation was followed by discharge of some of the intestinal contents, and much exhaustion. The patient died on the 7th day. A post-mortem examination showed that the duodenum had been torn where it was adherent to the kidney, and that the Fallopian tubes and the right ureter were all tubercular.

#### *External Urethrotomy.*

One patient, on whom this operation was performed after an injury, died. He had been run over by a cart, and the bladder had been torn at the apex, the peritoneal coat alone being uninjured. The case is described in the Transactions of the Pathological Society for 1886—1887.

### **OPERATIONS ON THE THYROID GLAND.**

A girl, aged 17, was admitted for dyspnoea, which resulted from the growth of a glandular goitre. The goitre was of three years' standing, but had only grown rapidly for about twelve months. The thyroid isthmus was divided, and tracheotomy performed with relief to the dyspnoea, and a temporary decrease in the size of the tumour. From this time the patient was quite unable to breathe without the tube, and after many attempts to remove it the right half of the thyroid was excised six months after her admission. The tube was finally removed four months later, and the patient left the hospital in good health.

### **OPERATIONS ON HERNIÆ.**

Three female patients died after operations for the relief of strangulated femoral herniæ. One, aged 44, died three days after herniotomy from peritonitis resulting from perforation of the intestine at the seat of stricture. A woman of 75 died. One of 78 died of bronchitis.

A man, aged 41, died exhausted from continuous vomiting forty hours after herniotomy for a strangulated inguinal hernia. A post-mortem examination showed that the stricture had been divided, that there was no peritonitis, and that the gut was not gangrenous and had not given way.

A man, aged 62, died the day after inguinal herniotomy. The gut was gangrenous when the patient was admitted, and there was general peritonitis.

A man, aged 74, who had been operated upon for strangulated hernia fifteen years previously, was admitted with an enormous scrotal hernia in a state of acute strangulation. Herniotomy was performed, but the patient died in thirty-six hours. A post-mortem examination showed that the sac contained the cœcum, the ascending colon, and about 15 feet of small intestine.

A woman, aged 33, died the day after an operation for the relief of a strangulated umbilical hernia. A post-mortem examination showed that the gut had given way at the seat of constriction, and caused diffuse peritonitis.

A woman, aged 75, died after an operation on strangulated umbilical hernia as large as an adult head, and complicated by numerous adhesions. The patient survived the operation one day.

In all the cases in which an operation for the radical cure of a hernia was performed the sac was excised, and its neck ligatured or sutured.

A patient with a small protrusion of the subperitoneal fat through the linea alba died, after an operation for its removal, from peritonitis. He had diseased kidneys.

#### **COLOTOMY.**

Three women died after colotomy. One, a woman of 60, died on the seventh day after operation from general peritonitis. The peritoneum had been opened during the operation, there being no meso-colon.

A patient, aged 62, died eleven days after operation from cellulitis and sloughing around the lumbar wound.

A patient, aged 60, died two days after operation with symptoms of peritonitis, but no post-mortem examination was allowed.

#### **GASTROSTOMY.**

A man, aged 47, died on the twelfth day after operation. He was the subject of an epithelioma of the œsophagus, and was much emaciated. Death resulted from exhaustion.

#### **DRAINAGE OF SUPPURATING OVARIAN CYST.**

In the case of a woman, aged 30, a suppurating cyst was drained by free incision in the middle line of the abdomen. Everything went well for several weeks, and then the patient was suddenly seized with severe abdominal pain and vomiting, and died in thirty-six hours. A post-mortem examination showed that death was caused by intestinal obstruction and peritonitis, the result of adhesions of the omentum to the cyst.

SUB-TABLE, SHOWING THE NUMBER OF CASES OF ERYSIPELAS, PYÆMIA, &amp;c.

DISEASES.	Under 5.		5-10.		10-20.		20-30.		30-40.		40-50.		50-60.		60-70.		70-80.		TOTAL.		Deaths.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
CUTANEOUS ERYSIPELAS—																						
Admissions ... ..	7	2	3	4	8	5	11	14	12	10	10	3	6	2	1	1	1	...	59	43	4	...
Occurring in Hospital ... ..	...	...	1	...	2	...	2	1	1	...	1	2	1	1	...	...	1	...	9	4	2	1
Occurring after operation ... ..	...	...	...	...	2	...	1	1	...	1	...	1	...	...	...	1	...	...	3	4	...	1
PHLEGMONOUS ERYSIPELAS AND CELLULITIS—																						
Admissions ... ..	1	1	...	1	3	1	8	3	8	7	5	2	6	1	8	1	2	...	41	17	10	...
Occurring after operation ... ..	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...
PYÆMIA AND SEPTICÆMIA—																						
Admissions ... ..	...	2	...	...	...	...	2	...	...	...	2	...	...	...	...	...	...	...	3	1	1	1
Occurring after operation ... ..	...	...	1	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	3	...	3	...
DELIRIUM TREMENS—																						
Admissions ... ..	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Occurring in Hospital ... ..	...	...	...	...	...	...	1	...	2	...	4	...	...	...	...	...	...	...	7	...	2	...



## APPENDIX TO SUB-TABLE OF CASES OF ERYSIPELAS, &c

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### ERYSIPELAS.

#### *Admissions.*

The apparent discrepancy between the number of cases in this and in the first Table is due to the fact that some cases were admitted with erysipelas complicating some other disease or some injury, and that such cases have been entered in the first Table under the heading of the primary disorder.

#### *Occurring in Hospital.*

*Male.*—In two cases of perineal abscess. In one of abscess of the thigh. In one case of lupus. In one of punctured wound of the knee joint. In one of compound fracture of the tibia, and in one of the skull. In one case of necrosis of the tibia. In one case of ulcer of the leg.

*Female.*—In one case of spinal caries. In one of suppurating bursa patellæ. In one of recto-vaginal fistula. In one of punctured wound of scalp.

#### *After Operations.*

*Male.*—In one case of cleft palate. In one case of removal of necrosed bone from the mastoid process. In one case of castration for retained testis.

*Female.*—In two cases of amputation of the breast and removal of the lymphatic glands, and in one in which the glands were not removed. In one case of amputation of the leg for sarcoma of the foot. In one case of plastic operation on a ruptured perineum.

### PYÆMIA AND SEPTICÆMIA.

#### *Admissions.*

*Male.*—In two cases complicating necrosis of the mastoid bone. In one of multiple abscesses. In one of cut throat.

*Female.*—In one case of acute periostitis of the tibia in a child of 3.

#### *Occurring after Operations.*

##### *Male.*—

A lad, aged 22, died of septic pleurisy sixteen days after plugging of the nares for epistaxis.

A man of 21 died a week after a plastic operation on the hand for a contracted cicatrix. A post-mortem examination showed septic emboli and abscesses in each lung.

A boy of 7 died after operations on the tibia and femur for the removal of necrosed bone. He had suppuration in his joints and embolic abscesses in the lungs.

TABLE OF AMPUTATIONS WITH THE PERCENTAGE OF DEATHS DURING THE TEN YEARS  
from 1877 to 1886 inclusive.

OPERATIONS.	CASES UNDER TREATMENT.										PERCENTAGE OF DEATHS.										Total Number of Cases.	Deaths.	Average Per- centage of Deaths.	
	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.				
PRIMARY—																								
Thigh ...	...	2	4	1	3	1	3	1	2	2	2	...	50	100	65.66	100	100	50	100	...	21	13	61.90	
Knee Joint	...	1	...	2	...	1	...	...	...	...	...	...	...	50	...	100	...	50	...	...	4	2	50	
Leg ...	...	2	2	1	...	3	4	4	2	3	1	100	50	...	33.33	50	50	...	33.33	100	22	16	45.45	
Ankle Joint	...	...	...	...	...	2	2	...	3	...	1	...	...	...	...	...	...	...	...	...	8	...	...	
Shoulder Joint	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	100	...	...	...	1	1	100	
Arm ...	...	2	3	3	...	1	2	2	...	4	2	...	...	33.33	...	...	...	...	25	...	20	2	10	
Forearm	...	2	1	5	3	3	3	3	4	2	3	...	...	...	...	...	...	...	...	...	26	...	...	
SECONDARY—																								
Thigh ...	...	...	1	1	...	3	...	1	1	5	...	...	100	100	...	...	66.66	100	...	...	13	5	38.46	
Leg ...	...	1	2	...	3	2	1	3	1	3	2	100	...	...	50	100	...	...	66.66	...	18	5	27.77	
Arm ...	...	...	...	1	...	...	...	2	2	...	...	...	...	...	...	...	...	...	...	...	5	1	20	
Forearm	...	1	1	...	1	1	...	2	...	3	1	...	...	...	...	...	...	...	...	...	10	...	...	
Shoulder Joint	...	...	...	1	...	...	...	...	...	...	...	...	...	...	100	...	...	...	...	...	1	1	100	

[illegible]











